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LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

Facing time

*2003-2004
annual report*





toe

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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.

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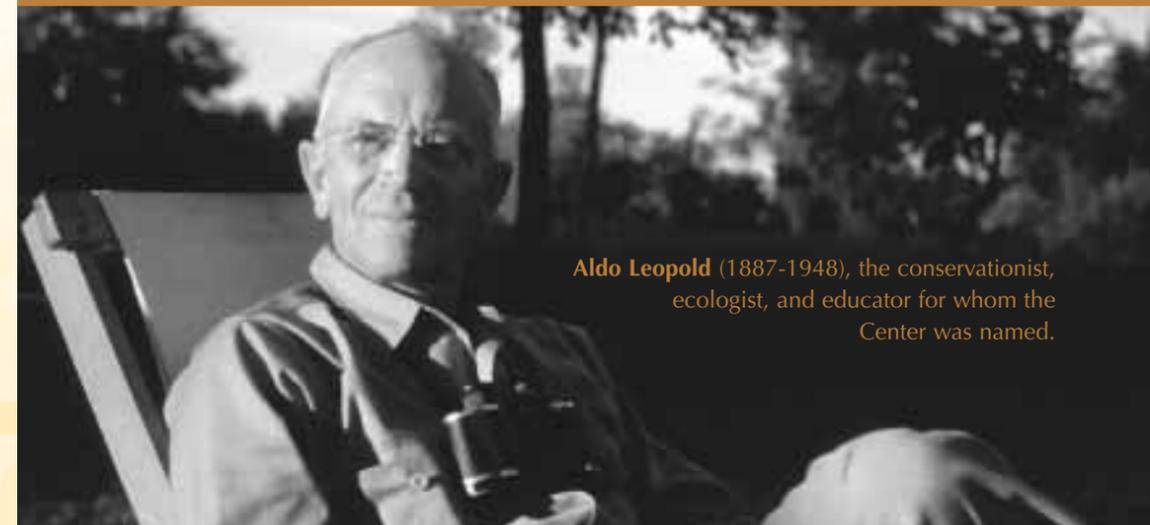
The Leopold Center for Sustainable Agriculture explores and cultivates alternatives that secure healthier people and landscapes in Iowa and the nation.

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

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

Letter from the *Director*



Fred Kirschenmann

THE ENTHUSIASTIC SUPPORT AND HARD WORK ON THE PART OF ORDINARY IOWA CITIZENS AND ENTREPRENEURS WHO ARE PARTNERING WITH US ON RESEARCH, DEMONSTRATION, AND EDUCATIONAL EFFORTS ALLOWS US TO REMAIN HOPEFUL ABOUT THE FUTURE.

Our 2002-2003 Annual Report reflected, for the first time, the new configuration of the Leopold Center's work into three initiatives: marketing and food systems, policy and ecology. This latest annual report begins to reflect the results of this revised way of focusing our research efforts and it features the results of our activities in the marketing initiative in greater detail than the other two initiatives.

We have been very gratified by the enthusiastic response to our introductory work in these initiatives. Farmers, academics, industry entrepreneurs and nongovernmental organizations (NGOs) all have cooperated with each of the three initiative leaders to develop new production and business models that can help farmers become more sustainable.

We are, of course, very mindful of the time frame we have been given in which to work for Iowa's farmers. The 2002 Census of Agriculture data, analyzed for us by our own Mike Duffy, have reminded us in rather stark terms just how critical our work is and how little time we have left. By far the biggest farm population losses in the five-year period between 1997 and 2002 have been for those with annual sales between \$50,000 and \$500,000—17 percent of Iowa's farms and 14 percent nationwide! At this rate of attrition, these farms, which have traditionally been the heart of agriculture in Iowa, will be gone in another decade or less. Their loss would not only represent a loss of consumer food choices, but also would signify a loss of rural community vitality and environmental quality.

That's why the work of our Pork Niche Market Working Group is so important to hog producers looking for ways to stay in business and make a profit. That's why our research on the programs that are currently available and still needed to help Iowa's beginning farmers is so critical. That's why our support of grass-based livestock production—through grants for research on grazing and active advisory group discussions—is aimed at offering another alternative to farmers.

The enthusiastic support and hard work on the part of ordinary Iowa citizens and entrepreneurs who are partnering with us on research, demonstration, and educational efforts allows us to remain hopeful about the future. Our entire staff is absolutely committed to doing everything they can to make new, profitable, and environmentally sound opportunities available for farmers and to provide more food choices to consumers, in Iowa and throughout the United States.

Once again, we hope you find this report useful for your own work. We invite you to join us in our efforts on behalf of sustainable agriculture and welcome any comments you may have.

Fred Kirschenmann

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(*Board members who served
only a portion of the fiscal year)



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three III

financials

Optimistic realism

If it is indeed possible to convey optimistic realism these days, the Leopold Center would like to give it a shot.



After a three-year period in which the Center's state funding was decreased by nearly \$1.5 million, Iowa's financial situation appears to be stabilizing somewhat. We can offer some heartening reassurance to our many researchers and collaborators that the money they need to plant their crop test plots, assess their machinery and equipment, conduct their surveys, and share their findings with the public will be available when they need it.

The Center's three initiatives have begun to strike out on their own paths to support economic and environmental sustainability in their own ways. The Ecology Initiative has focused on participating in some innovative larger-scale efforts to make changes on the land since Iowa's environmental ties don't end at its borders. The Marketing and Food Systems Initiative has zeroed in on helping farmers in the here and now—finding new markets, building value chains, and pursuing regional and local food opportunities. The Policy Initiative has no shortage of hot topics—how to help beginning farmers enter a

profession with a rapidly aging population, how to gauge the success of new programs such as federal organic standards and the Conservation Security Program, and how to judge other avenues that farmers might use to obtain better prices for their products.

At the same time, the Center retains the flexibility to pursue research efforts that don't necessarily fit squarely within one of the initiatives. That work is covered here in a section on special projects, a category that has expanded with the departure of the broad-based competitive grants program that was the hallmark of the Center's first decade.

We don't kid ourselves about the challenges facing Iowa agriculture. They are daunting and deep-seated. But we also like to think that through our efforts on a variety of fronts, Iowa's farmers will have more options, more possibilities, and more hope for their future on the land.

Center absorbs modest budget cut for FY2004

After two years of significant reductions in funding from the state, the Leopold Center faced a much less extensive budget decrease for the 2004 fiscal year. The portion of the Center's budget that is funneled through the Iowa State University College of Agriculture (COA) was cut by 2.7 percent, or \$13,400. This was in line with reductions made by other agriculture-based units to compensate for a \$1.9 million budget shortfall in the COAs state funding. In addition, a mid-year reduction of 1.6 percent and an end-of-the-year cut of 0.2 percent were made to the same account.

The Center did not experience a FY2004 reduction in revenues in the funding earmarked by the 1987 Groundwater Protection Act. This account had been subjected to a \$1 million transfer of funds in FY2003.

OPERATIONAL BUDGET

Salaries & Benefits	396,882.43
Info Systems	5,642.63
Office Expenses	12,735.34
Printing	
Newsletter	8,887.68
Annual Report	6,747.15
Other	5,916.76
Postage	
Newsletter	3,231.88
Other	6,243.75
Services, Information & Communication	15,686.37
Travel	15,589.81
Meeting Expenses	8,622.22
Utilities/Maintenance & Repair	4,168.36
Total Operational Expenditures	490,354.38

RESEARCH AND GRANTS BUDGET

Competitive Grants	942,654.14
PFI Partnership	50,000.00
LTAR Support	50,000.00
Wallace Chair Support	20,000.00
Assoc Director's Support	70,387.00
Administrative Support	25,502.00
Total Grants	1,158,543.14

INITIATIVES BUDGET

Ecological Systems Research	100,000.00
Marketing & Food Systems Research	100,000.00
Policy Research	100,000.00
Total Initiatives	300,000.00

Total Budget: 1,948,897.52

WE CAN OFFER SOME HEARTENING REASSURANCE TO OUR MANY RESEARCHERS AND COLLABORATORS THAT THE MONEY THEY NEED TO PLANT THEIR CROP TEST PLOTS, ASSESS THEIR MACHINERY AND EQUIPMENT, CONDUCT THEIR SURVEYS, AND SHARE THEIR FINDINGS WITH THE PUBLIC WILL BE AVAILABLE WHEN THEY NEED IT.



APPLAUDS TWO LEOPOLD CENTER STAFFERS



Michael Duffy

Michael Duffy, Center associate director, and Rich Pirog, program leader for marketing and food systems, were among the College of Agriculture (COA) faculty and staff who were honored at the college's spring convocation in January 2004.

Duffy received the COA's award for Outstanding Achievement in Extension and Pirog was recognized with the Professional and Scientific Staff Award for Achievement and Service. The Leopold Center is one of the smaller units in the COA, so it was especially gratifying to see two Center employees snare some of the college's top service awards.

Duffy, who has been with the Center for ten years in various directorial capacities, now manages the work of the Policy Initiative. He also holds a faculty appointment in the economics department and serves as an ISU Extension economist supervising 17 extension associates who offer a variety of financial and business management services to Iowa farmers.



Rich Pirog

In addition, Duffy is professor-in-charge of the Beginning Farmer Center which helps those who want to enter the farming profession.

Pirog, a 14-year veteran of the Center, started out as education coordinator and now supervises the extensive activities of the Marketing and Food Systems Initiative. He is director of the Value Chain Partnerships for a Sustainable Agriculture project funded by the W.K. Kellogg Foundation. Pirog has written a number of well-received papers on the topics of ecolabels, alternative horticultural crops in Iowa such as apples and grapes, and the concept of food miles as a metaphor to contrast local and global food systems.

NEW STAFF MEMBERS JOIN LEOPOLD ROSTER

The Leopold Center added two new staff members in late summer 2003.

Sheryl Johnson transferred to the Center from the ISU Research Foundation office. She replaced long-time office secretary April Franksain. Johnson served for many years as the administrative assistant at the ISU Press and also worked in the administration office of ISU Extension.



Andrew Hug, a program assistant, came to the Center from the ISU Department of Food Science and Human Nutrition. He works primarily (75-80 percent) on the Value Chain Partnerships for a Sustainable Agriculture project that is funded by the W.K. Kellogg Foundation and managed by the Center's Marketing and Food Systems Initiative. The remaining one-quarter of his time is taken up with other Marketing Initiative and Leopold Center activities.



CENTER SUPPORTS *three grad students* IN ISU SUSTAINABLE AG PROGRAM

As part of an ongoing commitment by the Leopold Center advisory board, the Center provided a second year of funding to three students enrolled in Iowa State University's Graduate Program for Sustainable Agriculture (GPSA). The Center financed research done by the same three individuals and their faculty advisors during their first year of studies. The three GPSA students receiving support from the Center were:



XIOFAN NIU, China, working with X.B. Yang in plant pathology;



KARIE WILTSHIRE, Indianapolis, working with Kathleen Delate in agronomy and horticulture;



ERIN TEGTMEIER, Chicago, working with Mike Duffy in agricultural economics.

Tegtmeier finished her work with the GPSA and was selected to be director for the Experiment in Rural Cooperation organization in Rochester, Minnesota.

2003 Spencer Award GOES TO ELDORA CATTLEMAN

A Hardin County cattle producer and his family who raise their commercial Angus herd on 22 connecting pastures along the Iowa River received the Spencer Award for Sustainable Agriculture in 2003. David, Diane, and Dresden Petty own and operate Iowa River Ranch, a cattle and crop operation that has been singled out for other environmental stewardship awards, notably from the National Cattlemen's Beef Association and the U.S. Environmental Protection Agency. The Petty operation relies on rotational grazing and includes wildlife habitat and water quality amenities.



The award was given to the Petty family at the 2003 Iowa State Fair. Governor Tom Vilsack made the presentation at the beginning of the Governor's Charity Steer Show, and brief remarks were provided by Fred Kirschenmann and Jim Penney, then-advisory board chair.

The Spencer Award for Sustainable Agriculture honors farmers, researchers and educators who have made a significant contribution to maintain the stability of Iowa family farms. It is funded by an endowment from the family of Norman and Margaretha Spencer, longtime farmers in the Sioux City area.



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PFI *rolls along*

The Leopold Center continues to nourish a long-running relationship with Practical Farmers of Iowa (PFI) in several areas aimed at improving farmer involvement in sustainable agriculture investigations. The Center contributes \$50,000 per year to support PFI's extensive on-farm research and demonstration program. This year 15 of these PFI farmer cooperators held field days attended by 900 people who came to see how alternative farming practices can work on the ground. PFI makes a point to partner with agricultural scientists and ISU Extension field specialists in presenting information at these field days.

In addition, PFI collaborated heavily with the Center through coordinating the ongoing work of the Pork Niche Market Working Group, one of three working groups in the Value Chain Partnerships for a Sustainable Agriculture project.

Here are some of the PFI field trials that were conducted with Leopold Center funding:

FERTILITY TRIALS

Paul and Karen Mugge of Sutherland tested a product called Enzone® that is said to increase soil nitrogen biologically. The product contains free-living micro-organisms that turn atmospheric nitrogen into plant-available nitrogen. However, the product did not perform well in trials and the results from use of less expensive liquid manure were better than from the soil inoculant or the control.

BIOLOGICAL CONTROL OF SOYBEAN APHID

ISU entomologist Junwei Zhu is working on environmentally friendly measures to stem the spread of the soybean aphid. Natural predators or parasites are pressed into service to control the aphids. One strategy called for treating soybeans with sugar water spray to attract beneficial aphids. A modest reduction in the number of aphids was achieved. The second method of attracting beneficial insects was to use a lure that emits the same compounds that plants give off when they are attacked by the aphid. The lure was more successful in trimming aphid populations than the sugar water, and soybean pod weight was significantly increased with the use of the lure. Using sugar water with the lure offered no additional advantage. A three-part program of aphid control was tested in summer 2004.

COVER CROPS WITH RECONFIGURED RIDGE-TILL

Richard and Sharon Thompson of Boone repeated a trial they had done earlier: seeding twin rows of rye cover crop on the ridge before corn. Past tests have shown that rye can be conveniently removed by the ridge-till planter without leading to weed problems or yield loss. This year Thompson changed the configuration of his planter to help remove more of the crop residue and weed seeds. The adjustments to the planter managed the rye plantings and

dealt with the residue. However, the cultivator plugged and reduced the corn stand in the trial. The rye cover crop did not have a statistically significant effect on corn yields.

DEEP TILLAGE

Wayne and Ruth Fredericks of Osage wanted to know if the deep-tillage that was being used and promoted in their area of north Iowa would be a good option for them. They use ridge-tillage in a corn-soybean rotation, and were concerned about whether the lack of primary tillage would affect crop yield. A side-by-side pair of field strips for comparison was replicated five times across a field. The only spot where yields were reduced was along the edge of the field—where there is more soil compaction from the wheel traffic of grain wagons, etc. The results showed no yield benefit from deep tillage.

CROPPING SYSTEMS ANALYSES

Jeff Klinge and Deb Tidwell farm about 300 acres near Farmersburg in northeast Iowa. Jeff had created several years of production budgets for his organic soybeans and for conventional soybeans grown in his neighborhood. In 2003, they decided to add operational costs and revenue for each crop in their five-year rotation. Based on the yields and costs reported from 2003, a producer using the non-organic, corn-soybean rotation would need to run

an operation several times larger than the Klinge/Tidwell farm to realize the same net return.

Richard and Sharon Thompson of Boone also use a five-year rotation, but unlike the Klinge/Tidwell farm, they do not sell organic crops. They rely on above-average yields and the integration of the cropping and livestock enterprises to achieve consistently greater profitability than the typical central Iowa operation. This integration includes the “sale” (at market prices) of significant amounts of crop residue, stubble, and straw to the swine and cattle enterprises. The Thompsons report advantages to a five-year rotation over the more common two-year rotation. Over the last five years, their returns have an advantage of \$193 per acre over standard Boone County per acre totals. Hay has been a big money maker in the rotation.

THIS YEAR 15 OF THESE PFI FARMER COOPERATORS HELD FIELD DAYS ATTENDED BY 900 PEOPLE WHO CAME TO SEE HOW ALTERNATIVE FARMING PRACTICES CAN WORK ON THE GROUND.



The Ecology Initiative supports research and development of ecologically friendly systems that are more resilient and less costly to farmers, communities and the environment. This includes identifying how farming practices can:

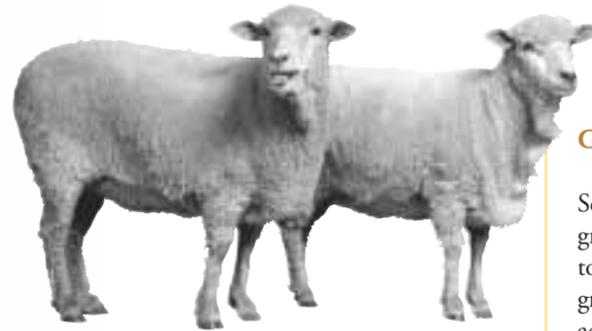
- use free ecosystem services, • enhance biodiversity, and • apply natural processes as models to increase agricultural productivity.

Ecology program leader Jeri Neal says, "We are looking for a balance of programs and partners across the scale from individual plot work to basin-wide activity. The ecology initiative supports landscape level integration, is launching a new farming systems program, collaborates on multi-disciplinary projects and efforts, and supports a variety of research and demonstration projects."

GREEN LANDS BLUE WATERS (GLBW)

The Leopold Center is one of 36 participants in this evolving multi-state, multi-partner, long-term comprehensive effort to improve water quality in the Mississippi River and elsewhere, boost wildlife habitat, reduce flooding potential, increase economic options and profitability for farmers, strengthen rural vitality, and enhance human health. The GLBW mission is to support development and adoption of a new generation of agricultural systems in the Mississippi River Basin that foster a more resilient agricultural landscape.

The GLBW consortium is a good fit with the goals of the Ecology Initiative, which is involved in three work areas directly related to the GLBW efforts:



- Partnering on a McKnight Foundation grant that supports the leadership, management, and coordination needed to build the foundation for the GLBW initiative,
- Partnering on a W.K. Kellogg proposal for mapping hypoxia-related work and barriers in the Midwest basin region, and
- Administering a \$208,000 U.S. federal government payment to be used in support of three objectives that are Iowa-based, but complementary to the basin-wide effort: 1) optimizing agricultural production on specific landscapes, 2) facilitating land use change to create ecological buffers and water retention areas, and 3) diversifying land use to increase production of perennials for bio-based and energy crops optimizing agricultural production on specific landscapes.

GRASS-BASED PROJECT FORMED

Serious, long-term potential exists for grass-based livestock and crop systems to revitalize Iowa agriculture. Numerous grass-related research, marketing, and farming activities already are underway in Iowa and surrounding states. Ecology program leader Neal knew there was an opportunity to make significant progress in grass-based systems when the winter 2003 Ecology call for pre-proposals generated more than a dozen concepts related to forages and grazing.

Neal and Center Director Fred Kirschenmann identified a short list of Iowa experts who would be willing to serve on a grass-based advisory committee to assist in considering the pre-proposals and charting a path for further grass-based research. Committee members worked by phone and e-mail to contribute to the pre-proposal assessments, and met on April 28 to discuss the concept of a statewide grass-based project. The group discussion affirmed the need for some kind of commitment to work in this area and provided guidance in setting priorities. A job description was prepared for a person to lead the project and begin work sometime late in 2004.

"RE-THINKING AGRICULTURE: AS IF THE REAL WORLD MATTERS" AND "WHAT IS FARMING FOR?"

To promote thinking and discussion on these challenging topics, the Ecology Initiative, in cooperation with the ISU Bioethics program, hosted several October 2003 appearances by Jules Pretty, an internationally known British scholar and director of the Centre for Environment and Society at the University of Essex (UK). Pretty is best known for his comprehensive study of more than 200 sustainable farming projects on 70 million acres in 52 countries, which showed that the use of sustainable agriculture practices can lead to substantial increases in production—perhaps as much as 150 percent for some root crops.

Neal noted that the terms "ecological" and "sustainable" can be confusing even among the Center's collaborators, often because the concepts are viewed as exclusive of their economic component. Pretty loosely defines sustainable as making the best use of nature's goods and services as well as human resources, while retaining the idea that agriculture also must contribute to the public good. "We have come to view farming landscapes as being primarily bread baskets, yet agriculture is more than about producing food," he said. "We get many positive things from agriculture, including clean water, cohesive communities, rural employment, flood protection, aesthetically pleasing landscapes and biodiversity."



Pretty, who has done research to estimate economic productivity of sustainable systems around the world, comments that the western world emphasizes "cheap food" when "food is actually very expensive. We end up paying for it three times—once at the market, a second time via taxes for subsidies, and a third time to clean up the environmental and health mess." Pretty reiterates the need to talk about these side effects and to reduce the more costly ones. "But we'll never get to zero costs for agriculture," he added. "Costs can only be reduced."



USDA/CSREES-FUNDED INITIATIVE FOR FUTURE AGRICULTURE AND FOOD SYSTEMS (IFAFS) PROJECT—“RE-INTEGRATING CROPS AND LIVESTOCK IN THREE NORTHERN STATES”

Modern farms have been moving away from integrated farming systems that raised animals and crops and toward ultra-specialized, mono-cropping operations. IFAFS, a federal project aimed at reclaiming the lost knowledge and many advantages of these integrated farming systems, is in its third year. Three cooperating states (Maine, Michigan, and Iowa) are collecting on-farm data and also collaborating on a book that will integrate the project’s research and findings. The Ecology Initiative is a cooperator in this project, which builds on research and real farm experience that show how spatially integrated crops and livestock production can promote economically viable farms, healthier farm communities, and healthier farm ecosystems.

The Ecology Initiative provides in-kind time for the IFAFS work and is funding a small project to create an economic risk assessment model that will complement the livestock decision-making pieces of a larger Internet-based tool. The Iowa team has a model farm planning tool, I-FARM, available at I-FARMtools.com. Project partners maintain related content at www.umaine.edu/integratedfarming.

ISU EFFORT TAKES SHAPE

Over an 18-month period, the Leopold Center participated in a series of meetings that were called by ISU College of Agriculture Dean Catherine Woteki to discuss a framework and context for a new agroecological initiative for the college. The initiative, for which the Leopold Center will provide \$25,000 in leadership salary support, is called the Agriculture Systems Management and Performance Initiative and will be led by Richard Cruse of the Department of Agronomy.



ANOTHER VIEW FROM BIOSCIENCES RESEARCHER PUSZTAI

Arpad Pusztai has been a controversial figure in bioscience circles. In the last 30 years he pioneered research into the effects of dietary lectins (carbohydrate-reactive proteins), including those transgenically expressed in genetically-modified crops. Pusztai’s laboratory research on the nutritional and developmental impacts of a transgenic potato with increased natural pest protection spurred considerable public and scientific inquiry in Europe. The Ecology Initiative, in cooperation with the ISU Bioethics program, arranged for Pusztai to visit ISU in December, 2003 while he was touring other U.S. universities. Neal says that the Ecology Initiative will focus more on ecological interactions, including some limited research on interactions and impacts of transgenics with target and non-target species, and will offer a small amount of support for horizontal breeding efforts.

CHRIS MASER SPEAKS AT ECO-FAIR

The Ecology Initiative provided travel costs for Chris Maser, an independent author and international lecturer/facilitator in environmental conflicts, vision statements, and sustainable community development, to speak at the June 2004 Maharishi University of Management Eco-Fair in Fairfield, Iowa. Maser also is an international consultant in forest ecology and sustainable practices. Maser’s presentation employed a discussion of forest ecology and history as a metaphor for understanding the role and design of the human community and the individuals of which it is comprised.



WINTER 2003 ECOLOGY CALL FOR PRE-PROPOSALS

The Ecology initiative issued a call for pre-proposals in winter 2003. Assessment of the pre-proposals during the winter of 2004 resulted in work on 17 new projects to begin in FY05.

JONES AND REGANOLD FROM WASHINGTON STATE SPEAK ON SUSTAINABILITY

The Ecology Initiative, in conjunction with the ISU Department of Agronomy, hosted visiting lecturers John Reganold and Stephen Jones from the Department of Crop and Soil Sciences at Washington State University in November 2003. The scientists talked with university classes and also headlined a joint brown bag lunch presentation and discussion. Reganold’s research interests include land use and soil management, and measuring the effects of alternative and conventional farming systems on agricultural sustainability indicators such as soil quality, crop yield and quality, financial performance, environmental impact, energy efficiency, and social responsibility.

Jones has done research on breeding for improved winter wheat varieties (including perennial wheat), use of cytogenetic and molecular genetic techniques to identify and transfer genes of interest, and wild species as sources of genes for disease resistance, end-use quality and adaptability. The researchers offered comments at the brown bag lunch on “The effects of alternative and conventional farming on soil quality and other sustainability indicators” (Reganold) and “Breeding wheat for sustainable systems” (Jones).



The Policy Initiative conducts research on policy options to foster a sustainable agriculture. Among its goals are to help beginning farmers establish ecologically sound and profitable farming and marketing operations, reward farmers for producing public goods such as ecologically restored landscapes, wildlife habitat, recreational areas, etc. and modify regulations that put locally owned micro-enterprises at a competitive disadvantage.

Policy Initiative program leader and Center associate director Michael Duffy commented, "In the past year the policy initiative has used a variety of approaches, including conferences, research projects, and special projects."



XIV fourteen

WHO WILL FARM IOWA'S LAND?

Iowa farm owners are aging rapidly and the prospect of a wholesale turnover in land proprietorship is cause for some concern among policy makers and social scientists. The possible impacts of massive ownership change on Iowa's rural landscape and the agricultural sector are worthy of consideration. An October 6 conference co-sponsored by the Center's Policy Initiative and ISU's Beginning Farmer Center allowed time for several presentations and frank exchanges about farm business transfer and mechanisms for farm succession.

The event's keynote speaker was Andrew Errington, an agricultural economist from the University of Plymouth (England).

BEGINNING FARMERS

Young farmers are increasingly scarce on the Iowa landscape. Today there are more farmers over the age of 65 than under the age of 35. Almost one-fourth (24 percent) of Iowa's farmland is owned by people over the age of 74. Many groups and organizations have developed programs to help address these problems. The Policy Initiative hired an ISU Extension farm management specialist on a part-time basis to examine what was currently being done to help beginning farmers. This project had three distinct segments; 1) to ascertain the level of knowledge of existing programs within Iowa State University, 2) to determine what programs exist outside ISU, and 3) to make recommendations about the programs needed in light of the existing efforts.

As part of its approach to support people who want to enter farming, the Center sponsored an analysis of the possible fiscal impact of providing tax breaks for older farmers who help beginning farmers. Farm groups will need such information if they are going to propose legislation to offer this sort of tax compensation.



He had collected data on farm ownership transitions in France, Poland, England, Canada, Japan, and the United States through his FARMTRANSFERS project, and was able to point out some of the international similarities and differences in how farmland is passed along to the next generation. When farmland changes hands, it is more than a business transfer; it also encompasses the sharing or loss of experience and knowledge specific to that plot of land. In addition, there are financial issues that have made it more difficult for beginning farmers to ease their way into farm succession plans.

AGRICULTURE OF THE MIDDLE

What segment of farmers is dwindling most rapidly? It's not the smallest farms and definitely not the largest operations. Instead, farms in the middle of the size and income charts, which are most likely to be family farms, are in the most endangered category. The smaller farms are likely to serve direct markets of various kinds and are often supplemented with off-farm income. The large farms rely on their volume of sales to stay afloat. But what about "the disappearing middle?" These midsize operations are caught in the classic marketing crunch; they are too big to make a living solely on direct market sales and too small to produce the quantities of commodities needed to survive in the mega-markets.

A task force comprised of researchers from nine land grant universities and other agencies has been studying the dilemma of the "Ag of the Middle." They have been pondering how a new model of value chains may be the answer for some of these midsize farmers, who still control 80 percent of the U.S. farmland. Fred Kirschenmann has been very active in the efforts to promote alternatives for these middle-range farmers, and he and Mike Duffy helped write a white paper on the topic ("Why Worry About the Agriculture of the Middle?") that appears on the web site www.agofthemiddle.org. Duffy also has been compiling data from the 2002 Census of Agriculture to help explain and illustrate the problems that are facing the midsize segment of agriculture.

POLICY ISSUES DISCUSSION

Mike Duffy and Fred Kirschenmann joined with several other sustainable agriculture leaders in early April 2004 for a frank and far-reaching discussion of the agricultural policy areas that had the most potential for study by the Leopold Center. Attendees included Neil Harl, Charles F. Curtiss Distinguished Professor from the ISU economics department; Paul Johnson, former head of the Natural Resources Conservation Service and past member of the Iowa legislature; Mark Ritchie, president of the Institute for Agriculture and Trade Policy in Minneapolis; Traci Bruckner from the Center for Rural Affairs of Walthill, Nebraska; and Daryll Ray, director of the Agricultural Policy Analysis Center of the University of Tennessee, Knoxville. The results of the two-day session will include a white paper entitled "Toward a Global Food and Agriculture Policy."

GUIDELINES FOR POLICY RESEARCH

The Center's advisory board is working with Mike Duffy to craft a statement defining the Center's orientation and strategies when considering policy issues. There is a need for factual, non-partisan research in many areas of agricultural policy making and the Center's initiative will stress the collection of information and formulation of analysis, but will not offer endorsements or serve as an advocacy agency for policies or political causes.



"WHEN FARMLAND CHANGES HANDS, IT IS MORE THAN A BUSINESS TRANSFER; IT ALSO ENCOMPASSES THE SHARING OR LOSS OF EXPERIENCE AND KNOWLEDGE SPECIFIC TO THAT PLOT OF LAND."

fifteen XV



DUFFY STUDIES AGRICULTURE DOWN UNDER

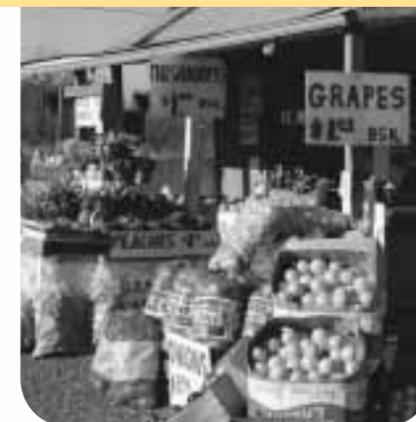
During the summer of 2003, Mike Duffy spent time in southeast Australia as a member of the Enhancing Science Networks Visiting Fellows program sponsored by the Australian government. He evaluated Australian sustainable agriculture and family farms programs, two areas where he has conducted much U.S. research. The Australian government shares the Center's concerns about the loss of family farms and is searching for better understanding and possible solutions.

Duffy noted that the Australian climate and agricultural resources differ significantly from Iowa's situation, especially in the Australians' heavy reliance on grass-based animal production. Also, in Australia there is no direct government support for agriculture, while U.S. farmers receive substantial assistance from government commodity programs.

Yet he found that the problems facing family farms often were similar for Iowans and Australians. Among them:

- difficulties in defining what constitutes a farm as opposed to a rural residence,
- disappearance of farms "in the middle,"
- challenges of making a profit in production agriculture,
- high land values,
- declining farm population, and
- pressing environmental issues.

This suggests that many of these common dilemmas are associated with agriculture in the developed world, which calls for seeking answers that might apply to farmers on a global basis rather than merely in Iowa.



AMERICAN COUNTRY LIFE ASSOCIATION ACHIEVEMENTS RECALLED IN NEW BOOK

The Policy Initiative provided support for publication of a new scholarly work documenting the influence and accomplishments of the American Country Life Association (ACLA). *American Country Life: A Legacy*, by Gene Wunderlich, was published by the University Press of America in 2003.

The ACLA served several important functions for rural citizens and farmers from 1919 to 1976, but its main goal was to bring public and governmental attention to issues related to the American countryside. The ACLA emphasized that rural life is multi-dimensional and not all rural dwellers are farmers, which continues to be true today. It was a direct outgrowth of President Theodore Roosevelt's Country Life Commission and there have been some calls for the appointment of a similar commission that might consider the policy issues facing modern day rural America.



Erin Tegtmeier

GRADUATE STUDENT COMPLETES POLICY RESEARCH PROJECTS

Erin Tegtmeier, a student in ISU's Graduate Program for Sustainable Agriculture, worked with Mike Duffy on two projects related to the interests of the Policy Initiative. The first surveyed 400 residents of Black Hawk County (IA) concerning their attitudes toward local foods. The FoodRoutes Network sought this information prior to embarking on a pilot campaign called Buy Fresh Buy Local. Previous studies suggested that consumers have generally positive feeling about local foods, but these attitudes don't necessarily translate into active purchasing patterns.

Tegtmeier's survey work and analysis offered several conclusions:

- A higher education level and being acquainted with a farmer are significant to a person's orientation to purchase local foods.
- Efforts to boost the relational aspects of food (i.e., labeling, in-store displays, directories to local food outlets, and field days) are worthwhile.
- Serving local foods in restaurants will help increase the visibility of area producers.
- Local foods offered in medium-priced, quick-service establishments may prove to be especially valuable at tapping a larger audience.
- Promoting the quality aspects of local foods (such as freshness, taste, and nutrition) may lure more potential customers than appeals on a civic or social basis.

Tegtmeier and Duffy also collaborated on a paper about the true external costs of an industrialized agriculture. The study estimated external costs of agricultural production in the United States in the areas of natural resources, wildlife and ecosystem biodiversity, and human health. The paper conservatively estimated external costs to be from \$5.7 to \$16.9 billion dollars per year, or between \$11 and \$38 per acre for all 417 million acres in the United States. Duffy expects the paper to be published in the *International Journal of Agricultural Sustainability* later in 2004.

Tegtmeier also completed compiling results of a survey on all aspects of Community Supported Agriculture (CSA) in the upper Midwest that had been commissioned earlier by the Center. The resulting paper may be published in two different formats.



marketing and food systems initiative

Farmers need to take advantage of innovative marketing opportunities if they are going to stay in business. The goals of the marketing and food systems initiative are to:

- *Research and test new marketing strategies and business structures that allow Iowa's small and midsize producers to retain more of the value for food, fiber, or energy produced with high standards of environmental and community stewardship;*
- *Develop farmer opportunities for levels of ownership, equity, and/or influence within the value chain; and*
- *Research and document economic, environmental, and community impacts of local and regional food, fiber, and energy value chains to determine best how farmers, processors, and agricultural entrepreneurs can use this information in their market messages.*

VALUE CHAINS PROJECT FLOURISHES

The Value Chain Partnerships for a Sustainable Agriculture (VCPA) project moved into its second year of funding from the W.K. Kellogg Foundation with plans to expand its three working groups, support additional research and development projects, and encourage networking among its rapidly expanding circle of partners and collaborators.

The Pork Niche Market Working Group, the first of the groups to be formed, funded eight projects in 2003. It continues to offer practical information to farmers who are interested in producing differentiated pork products for specialty markets—and it has become a key place where technical and financial resources come together to address challenges found in these unique value chains. With 30-plus partners, it remains active and engaged in helping niche pork producers find workable economic alternatives and new markets.

The Bioeconomy Working Group awarded money to four projects in its first year. The group is looking at developing value chains for kenaf (a fiber crop) and corn stover in a manner that will allow farmers to share more equitably in the risks and rewards of these chains. The working group, with assistance from the nonprofit organization The Natural Step, is developing a sustainability matrix for these two fiber-based value chains, documenting what it takes for each partner in the chain to be economically, environmentally, and socially sustainable.

The Regional Food Systems Working Group, which was begun in the fall of 2003, also supported four projects in its first round of grants-making. Initial efforts by the group seek to gauge the attitudes and economic/community impacts of local and regional food systems, markets, and purchases in Iowa.

The group developed a definition for their operations: A regional food system supports long-term connections between farmers and consumers while helping to meet the health, social, economic, and environmental needs of the communities within that region. Producers and markets are linked via efficient infrastructures that:

- promote environmental health;
- provide competitive advantages to producers, processors and retailers;
- encourage identification with a region's culture, history, and ecology; and
- share risks and rewards equitably among all partners in the system.

The group is learning about the successful European model of food products linked with geographic indicators (i.e., where quality, characteristics and/or reputation of the food are attributable to its geographic origin) and how certification marks are used to differentiate and protect U.S. food products.

ARE ECOLABELS A MARKETING HOOK THAT WILL HELP FAMILY FARMERS?

The Marketing Initiative staff worked with the ISU Business Analysis Laboratory on two phases of a project to assess the worth of ecolabels in promoting local and regional food products. The Center published papers that summarized the results of each phase of the project.

In the first phase, staff conducted an Internet survey of 1,600 consumers in Iowa, seven other Midwest states, and the Boston and Seattle areas. Their questioning yielded some provocative findings about the use of ecolabels and the value of “locally grown” and “freshness” as marketing messages. (Ecolabels are seals or logos showing that a food item was produced under a certain set of unique guidelines or environmental and/or social standards.) More than 75 percent of those who responded to questions about a series of these prototype labels chose products labeled as “grown locally by family farmers” as their first choice for produce or meat products. In addition, a quarter of these consumers indicated willingness to pay a premium of 6 to 15 percent for products featuring some of these desired attributes. A second survey of managers of food-related

businesses (such as supermarkets, meat lockers, and distributors) revealed that they thought more than 50 percent of their customers would be interested in ecolabels.

In phase two, Internet surveys again were used to gauge perceptions about the relative attractiveness of messages such as locally grown, family farm, and organic. Consumers were shown various advertising taglines and asked about their marketing appeal. “Freshness dating” that informs consumers of the time it takes to transport food from farm to store may have high value as a selling point for local products. These surveys were conducted with consumers in Iowa, Indiana, Illinois, Kansas, Minnesota, Missouri, Nebraska, and Wisconsin. Another parallel survey in Iowa in and the metropolitan areas of Omaha and the Quad Cities dealt with consumer interest and willingness of consumers to pay higher prices for food that was grown nearby.





ANOTHER NICHE MARKET—PASTURE-RAISED LIVESTOCK

Beef and dairy animals raised on pasture lands may prove to be attractive products for consumers. In a marketing survey conducted by the Center's Marketing Initiative and the ISU Business Analysis Laboratory, consumers appeared to appreciate the value of pasture-raised products and some were willing to pay extra for products grown under that production system. Their views were collected as part of an Internet survey of 315 consumers in Iowa and the Omaha and Quad City metropolitan areas.

MORE BUSINESSES TAKING "THE NATURAL STEP"



Sissel Waage

Sissel Waage, a representative of The Natural Step, an international advisory and research organization that promotes sustainability in business, visited ISU in November at the request of the Marketing Initiative. She presented a seminar explaining how her group is assisting companies, including large corporations such as McDonald's and Home Depot, to consider incorporating tenets of environmental and social sustainability into their core operating plans. Waage pointed out that encouraging the largest corporations to embrace sustainable precepts can provide "breathing room" for smaller companies that want to operate in a sustainable fashion. However, embedding and integrating sustainability concepts at a large corporation is a long-term process and measuring progress is both critical and difficult, according to Waage. She returned in April for a session with the Bioeconomy Working Group.

SELLING IOWA-GROWN GRAPE JUICE

The Marketing Initiative responded to Iowa grape growers who needed more information about possible markets by conducting surveys of buying clubs and churches about their interest in local juices. Ninety percent of the buying clubs that responded said they would be willing to be purchase a locally grown organic product. Fifty percent were willing to purchase a local grape juice product that was grown with limited pesticides. Two-thirds indicated interest in a locally grown sparkling grape juice even if it was not organic. Among churches that responded to the survey, convenience of purchase, taste, and price were most highly ranked as qualities of importance. The church groups were less concerned about how the product was grown or packaged.



CENTER SPONSORS ECOLABEL WORKSHOP FOR DIVERSE AUDIENCE

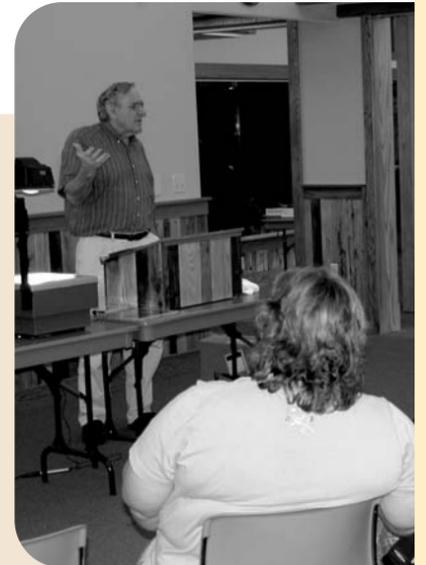
The Center's Marketing Initiative sponsored and coordinated the workshop, "Ecolabels and the Food Market: Opportunities and Challenges for Farmers and Consumers," at the Practical Farmers of Iowa (PFI) annual conference in January 2004. The workshop introduced several of the more promising food ecolabels emerging in the United States and discussed their potential benefits to farmers and consumers.

A NICHE MARKET FOR HEIRLOOM POULTRY INTRIGUES IOWA FARMERS

Label Rouge, a farmer-managed collective, has offered French farmers an excellent venue for selling their heirloom breeds of pasture-raised poultry at premium prices. Interested Iowa farmers and ISU community members joined Leopold Center staff to hear a presentation by two U.S. researchers who studied the Label Rouge system to see if it would work for local producers. Anne Fanatico and Holly Born, Arkansas-based specialists at the National Center for Appropriate Technology (NCAT), visited Ames in July. They explained how Label Rouge concentrates on high-quality products, with poultry as its prime offering. Their program emphasizes attributes such as taste and food safety, while showcasing its free-range production practices. The Leopold Center's Marketing and Food Systems Initiative sponsored the campus appearances by Fanatico and Born because of the potential for farmers to have influence across the value chain in this sort of collective.

CENTER HELPS MARSHALLTOWN COMMUNITY COLLEGE START SUSTAINABLE AG PROGRAM

Rich Pirog, Marketing Initiative program leader, is serving on the board of advisors for a sustainable agriculture degree program beginning at Marshalltown Community College (MCC) in the fall of 2004. "Sustainable and Entrepreneurial Agriculture" at MCC is the first degree program of its kind in the Midwest, allowing students to obtain associate degrees as well as certificates in specific areas of sustainable agriculture and business expertise. Pirog sees the program as one more way to help new people enter agriculture through unique farm businesses. Some of the program offerings will help train people to access the niche markets that have been targeted by the marketing initiative as having high potential for helping farmers. The Leopold Center provided a \$25,000 challenge grant to MCC to help get the program started.



Fred Kirschenmann speaks at MCC





A BUSINESS-LIKE APPROACH TO SUSTAINABLE AGRICULTURE

Fall 2003 marked the inauguration of a sustainable agriculture minor as an option for Master of Business Administration (MBA) candidates in the Iowa State University College of Business. Coursework for the MBA/sustainable ag degree option included offerings from the ISU Graduate Program in Sustainable Agriculture in its third year of operation.

Two new graduate assistantships were available to individuals interested in pursuing the minor. The assistantships were funded by a grant from the W.K. Kellogg Foundation and a contribution from the SYSCO Corporation, as part of the Value Chain Partnerships for a Sustainable Agriculture (VCPSA) project administered by the Marketing and Food Systems Initiative. The graduate students who take advantage of the assistantships will be assigned to one of the three VCPSA working groups on regional food supply chains, alternative pork production, and bio-based economy.

Norman McCoy is the first graduate student to participate in the new program. He has a broad range of experience in various fields of work and study. McCoy is helping the Regional Food Systems Working Group while taking courses that he feels will help him get his family farm near Des Moines back into working condition. Upon graduation from the program, he would like to teach in central Iowa and be a full-time farmer. A second student has accepted an assistantship to begin in fall semester 2004.



Norman McCoy

SITE VISIT BY KELLOGG OFFICIAL

Project director Gail Imig from the W.K. Kellogg Foundation spent two days in March 2004 observing and interacting with Value Chain Partnerships for a Sustainable Agriculture (VCPSA) participants and team members. VCPSA is one of eight projects in the Higher Education-Community Partnerships program of the Kellogg Food and Society Initiative. Her stop in Ames coincided with a visit from SYSCO CEO Rick Schnieders and two of his company vice-presidents for conversation with the Pork Niche Market Working Group. At the close of her tour, Imig said, "The purpose of the Foundation's Higher Education-Community Partnerships program is to show how we can use relationships between the university and people in the community to get things done. And I tell you what, it's happening here."



PIROG OBSERVES, SAMPLES ITALY'S LOCAL FOOD

"Lessons in differentiation" was the theme of a food systems tour of the Veneto region of Italy sponsored by the ISU Study Abroad program and the Cassamarca Foundation in May 2004. Marketing Initiative program leader Rich Pirog was one of 11 ISU faculty and staff who spent ten days looking at how the area's farmers have parlayed their regional food specialties into national favorites.

Pirog noted some significant variations from the United States in how the region's farmers and consumers interact. The focus was on food quality, not quantity. Farmers used culture, tradition, heritage, taste, and quality as competitive advantages for their products. In addition, the Italian government provided market and consumer protection for these unique, geographically-identified food products. Small to midsize farms produced fruit, vegetables, grapes, corn, and wheat on the plains and dairy (cheese), beef, and grapes in the hills and pre-dolomites. Another profitable option for some farmers was *agriturismo*, their version of the agritourism movement that is just taking hold in the Midwest. Pirog sees several areas of Iowa fruit, vegetable, cheese, and wine production that might benefit from the examples of these Italian farmers, and says that the Marketing Initiative will be pursuing further study to explore the Iowa possibilities such as Muscatine melons.



Rich Pirog in Italy's Veneto Region

PLACE MAKES TASTE

Beth Barham, a sociologist from the University of Missouri-Columbia, visited ISU on June 8 to share her findings on how place of origin can affect food taste. She offered insights on the potential for developing place-based food/wine businesses in Iowa. Participants in the meetings sponsored by the Marketing Initiative included the Iowa Department of Economic Development, the Iowa Department of Tourism, winemakers and vineyard owners, and rural and community development officials.





Kathleen Delate (right) and local apple grower.

ORGANICS INITIATIVE FORGES AHEAD

Since the beginning of the official ISU research program on organic crops as a profitable option for Iowa's farmers, the Leopold Center has provided considerable support for basic research and demonstration efforts. Program leader Kathleen Delate, an ISU horticulture and agronomy associate professor, has relied on steady levels of funding from the Center to sustain long-term research projects, which are starting to yield valuable findings that will shape the future of Iowa's organic crops industry.

The majority of these organic experiments are being conducted at ISU's Neely-Kinyon Research Farm near Greenfield. Delate and her research associates, Andrea McKern and Heather Friedrich, also manage projects at other ISU research farms and at sites operated by cooperating farmers. Cindy Cambardella, a soil scientist at the National Soil Tilth Laboratory in Ames, is another frequent collaborator on organics projects funded by the Center. Delate also received assistance from the farm superintendents at the ISU research sites.

RESULTS FROM 2003 GROWING SEASON PROJECTS AT THE NEELY-KINYON SITE:

Comparison of organic and conventional crops at the Long-term Agroecological Research Site (LTAR). Established in 1998, this program compares the long-term performance of four kinds of conventional and organic crop rotations. (Treatments at the LTAR site, replicated four times in random design, included these rotations: conventional Corn/Soybean, organic Corn-Soybean-Oats/Alfalfa, organic Corn-Soybean-Oats-Alfalfa-Alfalfa, and Soybean-Wheat.) The drought during late summer 2003 affected both corn and soybean yields, and soybeans were especially hard hit. There was no significant difference between organic and conventional soybean yields. Oat rotations also showed no significant yield variations. Pest populations were lower than in 2002, with no corn borers observed in mid-July. Soybean cyst nematodes were below economic threshold levels, with no significant differences among treatments. Organic soybean protein content, on average, was significantly greater than that of conventional soybeans for the first time in six years of organic production.

Evaluation of organic pest management treatments for bean leaf beetle. Organic tofu soybean producers have been struggling with the bean leaf beetle, the source of seed staining, which can lower the selling price of marketed soybeans. Delate's researchers have been evaluating four organically approved treatments for bean leaf beetle and fungal control in organic

soybeans since 2000. Very few beetles or signs of feeding were apparent until mid-July. Populations were significantly less than in 2002 with peak populations averaging 10 beetles per sweep, compared with 20 per sweep in 2002. With the absence of beetles, seed staining was reduced from the previous year, with no significant differences among treatments. Yields and grain quality were not affected by beetle management tactics.

Evaluation of wheat varieties for certified organic production. As consumer demand for organic products has increased, organic wheat has become a key ingredient in producing many of these food items. This variety trial evaluated the production of soft red, hard red, and soft white wheat in southwest Iowa. Results showed that the soft red variety had significantly greater disease pressure than the hard red or soft white varieties. A second soft white variety displayed intermediate disease

pressure. There were no significant yield differences among varieties, which showed organic wheat averaging 65 bushels/acre.

Evaluation of soybean varieties for certified organic production. Soybean varieties have been evaluated since 2000 for yield and ability to resist seed staining (and bean leaf beetles) under organic production methods. The 2003 trials tested six organic varieties from three seed companies. Stands in one Schillinger variety plot were significantly greater than in two of the IA variety plots. However, the IA plots reported significantly greater yields than the Schillinger variety. Bean leaf beetle populations were lower than the year before, which reduced seed staining in all varieties. Grain quality varied among plots, with one Schillinger variety averaging the highest protein level of any soybean at the Neely-Kinyon farm in 2003.

DELATE'S RESEARCHERS HAVE BEEN EVALUATING FOUR ORGANICALLY APPROVED TREATMENTS FOR BEAN LEAF BEETLE AND FUNGAL CONTROL IN ORGANIC SOYBEANS SINCE 2000.



ORGANIC RESEARCH AT OTHER SITES IN 2003

Evaluation of tillage and crop rotation effects in certified organic production, McNay Farm. In 1999 work began to establish a long-term agroecological research (LTAR) site in southeast Iowa at the McNay research farm in Chariton. Nearly two acres of a five-year-old forage field (predominantly brome grass, with some alfalfa) were dedicated to this project. Forty-eight plots (four tillage treatments, three crops, and four replications) were laid out in a randomized block design. Each crop of the rotation was planted each year starting in 2000.

No significant differences were observed in the 2003 corn plant stands. No corn borers were detected in early July checks. Corn stalk nitrate levels were lowest in the spring-plowed plots, but adequate levels of end-of-season nitrate were found in all the treatments.



ORGANIC RESEARCH AT OTHER SITES IN 2003 (CONTINUED)

Soybean plant populations were equivalent among all treatments. Weed populations also were similar, but in late July there were considerably more grass weeds in the spring-plowed treatment. Bean leaf beetles numbers (and subsequent soybean staining) were down from 2002, with no significant differences among treatments.

Yields were affected by low rainfall in the latter part of the summer. Organic corn yields averaged 128 bu/acre, with no differences among treatments. Soybean yields were 22.7 bu/acre and oats averaged 95.2 bu/acre. Grain quality remained high in 2003 with significantly greater levels of protein in spring-plowed corn and soybean protein averaged 37 percent, with no significant differences among treatments. After four years of successfully producing organic corn, soybean and oats, several new crops will be tested in the 2004 growing season.

Evaluation of corn, soybean and barley varieties for certified organic production, Crawfordsville Southeast Research Farm. A soil-building crop rotation is required for certified organic crop production, and organic fields at this farm follow a rotation of Corn-Soybean-Barley/Red Clover. This was the sixth year of production, which includes two cycles of the three-year crop rotation. There were significant differences recorded among corn varieties in stand counts at 22 days after planting. Grass and broadleaf weed populations in the corn varieties on June 10 were not significantly different, but a month later broadleaf weeds were considerably less in one of the NC plots. Soybean plant populations were significantly higher in an NC variety plot in early June and the lowest in an IA variety plot. Organic corn yields ranged from 116 bu/acre to 142 bu/acre. Soybean yields were lowest for a Vinton

variety (28.5 bu/acre) and highest for an NC variety (41.4 bu/acre). Barley yields were not significantly different among varieties, averaging 72.5 bu/acre. Bean leaf populations were lower than in 2002 with no significant differences among treatments on any sampling date. Seed staining also was reduced in 2003, although one NC variety exhibited a greater number of stained beans. No soybean cyst nematodes were recovered from any plots. Corn protein was significantly greater in one NC variety, while soybean protein levels were highest in an IA variety.

Organic winter squash and melon variety trials, Abbe Hills Farm, Mt. Vernon. Winter squash and melon varieties were evaluated at Laura Krouse's farm from 2001 to 2003. Researchers examined the most important farmer-identified problem in organic squash production for the organic baby food market—insect pest management. Based on earlier experimental results, row covers were selected as the method of pest management on the Cornell melons where insects posed a considerable threat to production. Winter squash, however, was not treated in order to rate tolerance to insect pressure.

Eight varieties of winter squash were planted but performance was hampered by low replications under drought conditions during the late summer of 2003. Table Queen and Waltham Butternut were the most vegetatively prolific varieties. Insect pests were present in moderate numbers. The largest individual average fruit weight and largest overall size were found in the Bush Delicata OP. Harlequin F1 was the highest yielding variety, while Waltham Butternut generated the highest percentage of marketable fruit.

Sugar Bowl melon plants produced the most vegetation, but also harbored the most pest insects once the row covers were removed. However, pest insect numbers were lower than those observed in the non-covered winter squash trials. Golden Gopher OP produced the greatest total weight and most fruits per plot. Sugar Bowl was rated as the best tasting melon variety in the trial.

Evaluation of soil amendments and cover crops for certified organic pepper production, Muscatine Island Research Farm. This long-term experiment compares pepper growth, yield, insect populations, harvest cullage, and post-harvest weight loss under conventional and organic management. Treatments for the first three years (1998 to 2000) consisted of combinations of two synthetic fertilizers and three compost-based certified organic soil amendments. In addition, the effects of a cover crop of hairy vetch and rye were examined in the organic system from 1999 to 2002. In 2003, a third-year evaluation of organic poultry litter-based fertilizer and gypsum soil amendment was conducted and the hairy vetch cover crop was examined for a fourth year with the addition of a side-dressing of organic nitrogen fertilizer.

At maximum growing point, mean leaf height was significantly different among treatments. The tallest plants were found in the treatments of organic fertilizer alone and with gypsum, and the vetch treatments. Leaf number also was greater in the organic treatments. Fruit number was similar in all treatments, except in the vetch treatments, where fruit numbers were the lowest. Plant growth was not increased by adding lime or gypsum to the fertilizer treatments.

Organic and conventional yields were similar in 2003. Although there was a trend toward greater yield in the organic fertilizer, vetch tilled, and conventional fertilizer plots, yields were not statistically different among treatments. Enhanced pepper productivity was obtained with nitrogen additions as low as 50 lb N/A from the organic fertilizer in 2003. Higher yields were obtained in the tilled vetch treatments in 2003 when compared with 1999-2001 results. There were no differences in average pepper weight and percentage of blemished peppers among treatments. Post-harvest weight loss was not consistent across treatments, with the conventional and organic control fruit showing the greatest weight loss after two to six weeks in storage.



initiative grants

move to support more focused initiative research and outreach

The Leopold Center began to move from a more general, broad-based research program to one structured around the goals of three tightly-focused initiatives. The initiatives will support research projects in these areas:

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.



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. This project will document successful management practices, design appropriate technology, and develop budgets and sensitivity tables for producers interested in winter farrowing. Investigators believe they have achieved a significant production breakthrough with a combination of modified huts and a radiant heater.

NEW Assessment of triticale varieties for swine feeding performance and tolerance to late planting, 2 years

L. Gibson and J.L. Jannick, ISU agronomy; and M. Honeyman, ISU Research Farms

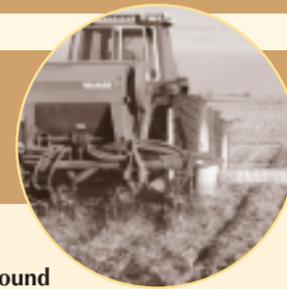
Four triticale feeding trials (two winter and two summer) will be conducted to evaluate pig performance in hooped housing. Investigators have seen both economic and environmental

advantages from growing triticale in Iowa, but lack information on swine feeding performance. Tests will be conducted at three sites to determine varietal adaptation of triticale in Iowa cropping systems.

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

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

Sprays have been the primary treatment for potentially damaging soybean aphid infestations. This project explores biological management options in field situations, and educates farmers about different options for managing levels of aphid predators as well as aphid populations. Early work has identified several predatory insects and parasitoids other than the originally targeted lacewings and ladybeetles. Researchers also have identified several aphid and soybean plant-associated volatiles that were attractive to the aphid predators. Preliminary field work using the attractants has shown that the application of dispensers containing attractants of beneficial insects reduces soybean aphid populations significantly, and also increases yield.



NEW Developing ecologically sound and profitable fertilizer and manure phosphorus management strategies, 3 years

A.P. Mallarino, ISU agronomy

Project goals are to evaluate long-term impacts of a strictly response-based, low-input phosphorus fertilizer management program for corn and soybean; assess early plant availability of poultry manure phosphorus; and use the Iowa P-Index to estimate field phosphorus loss under alternative phosphorus management practices. The resulting data will be used to develop more efficient management guidelines for phosphorus.

NEW Developing potatoes with horizontal resistance to the Colorado potato beetle, 3 years

D.G. Fisher, Maharishi University of Management, Fairfield

The investigator will continue ongoing research to develop potatoes with horizontal resistance to the Colorado potato beetle. The investigator theorizes that a process of recurrent mass selection can be used to build up resistance while preserving high yield.

Developing prototypes of environmentally sustainable family-owned beef feedlots in the Elk River watershed, project terminated in year 2 of 3 years

B. Van Laere, USDA-Natural Resources Conservation Service (NRCS), Clinton County and J. Zacharakis-Jutz, ISU Extension

Due to procedural and staffing issues, the project was closed. One producer in the area continues to work on feedlot remediation efforts and information bulletins for watershed landowners were prepared.

NEW Economically optimal enterprise mix for Iowa farms, 1 year

J.D. Lawrence, ISU economics

A computer model will be developed to incorporate price and production risk for alternative crop and livestock enterprises when a certain set of farm constraints (labor, capital, solvency, land characteristics) are 'imposed' on Iowa family-sized farms operating with and without government program assistance. The model may help evaluate the strengths and weaknesses of diversified farming operations under different economic and resource conditions.

NEW Establishment of a field school for weed ecology and management, 3 years

M. Liebman and R.G. Hartzler, ISU agronomy

Investigators will collect data on weeds, soils, and crops from both large and small field plots under two-, three-, and four-year rotations and organize an interactive farmer/practitioner-focused field school. Educators will target weed ecology and management, with an emphasis on decision-making skills and capacities and easily adaptable, broadly applicable techniques and models.

NEW Forage double-cropping demonstration, 3 years

I. Lamb, Iowa Native Lands; S. Barnhart, ISU

agronomy; and M. Honeyman, ISU Research Farms

Research plots of cool season legume crops (alfalfa and medium red clover) will be inter-seeded with warm season native prairie species to generate management and forage quality evaluation data. The investigators are seeking forage alternatives with improved diversity that require fewer management inputs while exhibiting high-quality performance.

NEW Grapes, pheasant, sweet corn education outreach effort, 1 year

J. Kuntz and M. Moore, Mahaska County Agriculture and Rural Development (MCARD)

Funding from the Center will help provide documentation and outreach materials for a three-year demonstration project where ducks, pheasants, and sweet corn have been integrated into vineyard establishment.

NEW Integrating hunting and grazing – Loess Hills and south central Iowa on-farm management experiences, 1 year

J.L. Pease and A.L. Major, ISU natural resource ecology and management

Two landowners are cooperating in this on-farm work to measure activities of birds in rotationally grazed warm and cool season grass pastures. The investigators are collecting real-life data in an attempt to validate prior experimental work on managing forages to benefit both livestock and wildlife.



initiative grants

NEW Integration of natural seed treatments in organic and open-pollinated corn systems, 2 years

S. Goggi, ISU Seed Science Center and K. Delate, ISU horticulture and agronomy

The essential oils of aromatic plants will be screened for their antimicrobial properties against seed- and soil-borne corn pathogens. The investigators hope to find effective biological seed treatments that will enable farmers to improve early-planting seedling establishment and grain yields in alternative cropping systems (specifically those with low chemical inputs, such as sustainable, organic, and open-pollinated corn).

NEW Iowa pawpaw trial maintenance, 3 years

P. O'Malley, ISU Extension, Johnson County

In 1999 and 2000, plantings were established near Columbus Junction and Nashua, Iowa to assess the viability of pawpaws as a horticultural crop for upper Midwest production. This project will provide production maintenance and recordkeeping for the previously established Iowa pawpaw trials, and begin the fruit evaluation phase of the trials.

NEW Quantifying the role of riparian management to control non-point source pollution of pasture and cropland streams, 3 years

J. Russell, ISU animal science and R.C. Schultz, ISU natural resource ecology and management

This large-scale project will comprehensively study, both on-farm and on research farms, the sediment and phosphorus losses for a number of management variations on cattle grazing systems in and around riparian areas. The investigators are refining ongoing research to obtain better data on phosphorus movement associated with pastures and grazing systems.



NEW The role of herbaceous woodland perennial diversity for improving nutrient uptake capacity of riparian areas, 1 year

C. Mabry McMullen and J.R. Thompson, ISU natural resource ecology and management

Investigators will quantify the nutrient uptake capacity of understory perennial herbaceous plants and compare the nutrient uptake capacity of a well-established understory to that of a degraded woodland understory. The low diversity of herbaceous perennials in grazed and degraded Iowa riparian forests in Iowa may be associated with increased nutrient loss, and, if so, it is believed that nutrient retention could be significantly enhanced by the restoration of native perennial herbaceous species.

NEW Survey of mycorrhizal symbioses at Neal Smith National Wildlife Refuge, 2 years

I. Lamb, Iowa Native Lands; P. Drobney, Neal Smith National Wildlife Refuge; and L. Tiffany, ISU ecology, evolution and organismal biology

Staff will conduct a preliminary survey of mycorrhizal (root fungus) associations in remnant and reconstructed prairies at the Neal Smith National Wildlife Refuge to establish baseline data and experimental protocols for future investigation of this biological component of the soil. The symbiotic relationships between plants, soil, and fungi and their contribution to plant and soil vitality are poorly understood, and this project offers a starting point for understanding soil functionality in perennial plant systems.

NEW Using the past to plan the future: Retrospective assessment of landscape and land use change in Clear Creek watershed, 1 year

L.A. Schulte, A. Rayburn, and L. Merrick, ISU natural resource ecology and management

Researchers will investigate landscape and land use change in Clear Creek watershed at four time periods and using three ecological and social measures: land cover, stream sinuosity, and housing density. The effect of many types of land management decisions can be assessed through historical reconstruction. Reconstructing the past also provides a richer understanding of what future watershed potentials may be.

NEW Variations in water and nutrient cycling and soil properties during agricultural landscape restoration, 5 years

H. Asbjornson, ISU natural resource ecology and management; M. Helmers, ISU agricultural and biosystems engineering; M. Liebman, ISU agronomy; L. Schulte, ISU natural resource ecology and management; and R. Kolka, USDA Forest Service, North Central Research Station

The research team will examine differences in nutrient, water, and carbon storage and output for selected mixtures of annual and perennial plant communities, and then provide educational opportunities about the results. They theorize that producers can reduce nutrient loads, improve water management, and maintain or improve agricultural productivity by strategic integration of perennial plants in agricultural landscapes.

NEW Winter grazing of stockpiled grass-legume forages to reduce costs of developing beef heifers, 1 year

J.R. Russell, ISU animal science

The investigator will evaluate cow performance, feed requirements, and costs for maintaining pregnant two-year cows by grazing stockpiled grass-legume forage vs. feeding hay with corn gluten supplementation. The project is collecting a third year of data; two mild winters may have positively influenced recommendations from the first two years of work.

Marketing and Food Systems Initiative

NEW Analyzing local food systems for success: Naming and graphing entrepreneurial and community based agricultural linkages, 2 years

C.R. Smith, National Catholic Rural Life Conference

The National Catholic Rural Life Conference (NCRLC) is partnering with the Iowa Network for Community Agriculture (INCA) to map technical information and relationships by asking people in Adair, Audubon, Greene, Guthrie and Shelby counties to draw a picture of their local food system. Analysis of the maps will provide information such as local resources for food systems, understanding of where value is already added within the local

system, gaps in the local system that could provide opportunities for local farmers and entrepreneurs, and issues that need to be addressed for further system development.

NEW Assessing the market potential of specialty forest products in local food systems, 1 year

C. Teator, Trees Forever, Marion

Research will be done on the market opportunities for unique products such as fruits, nuts, woody decorative florals, and mushrooms. Staff will interview 25 producers in north central and southeast Iowa and investigate possible sales outlets in the areas. They also will consider the effects of conservation efforts already begun by some landowners.

NEW Business organization and coordination in niche hog marketing: A comparative analysis of two niche marketers, 2 years

J. Kliebenstein and B. Hueth, ISU economics

This two-phase project will first consider generic economic, business and legal concerns in the following areas for niche marketers: timing, quality, process verification, business organization, and showing returns. Interviews of producers and managers of two existing organizations will be conducted. The second phase will focus on incentive design or premium payments. Alternative premium payment systems will be compared and evaluated for effectiveness in improving pork quality and showing returns from the quality improvement.

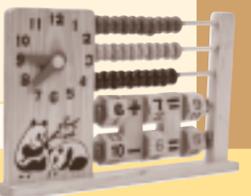
NEW Company environmental and social positioning as sources of competitive advantage: Implications for sustainable agriculture producers, 1 year

T. DeCarlo, ISU College of Business

An Internet survey will measure the degree to which companies operating on an environmental and socially conscious platform can enhance perceptions of value for their products even in the face of the higher prices consumers might typically pay for such products. The study also examines whether this type of positioning strategy can increase the value consumers place on goods produced by locally-owned firms vis-à-vis large, multi-national conglomerate companies.



XXX thirty



thirty-one XXXI

initiative grants



Life in Iowa interns: (left to right) David Rosmann, Ryan Holthaus, Susannah Eddy, not pictured: Ann Holste, Shawn Corey.

NEW Documenting the costs and benefits of whole animal local meat purchases by three northeast Iowa institutions, 1 year
K. Enshayan, Center for Energy and Environmental Education, University of Northern Iowa (UNI), Cedar Falls
Rudy's Tacos in Waterloo, Bartels Lutheran Home in Waverly, and UNI have been purchasing whole animals for their food service operations that are marketed by local producers and processors. The study evaluates the economic advantages, benefits, and costs associated with such purchases.

Grinnell area local food system initiative, 2 years
J. Andelson, Center for Prairie Studies, Grinnell College
The Grinnell Area Local Food Alliance (GALFA) seeks to expand the local food system in and around Grinnell. A directory was published with information on Grinnell-area food producers who market locally. The Leopold Center is supporting the segment of GALFA's effort that deals with institutional buyers (hospitals, nursing homes, restaurants, grocery stores, and schools) that provide food to customers or clients.

Investigating Iowa plants as natural dyes, 2 years (ending 2004)
S. Kadolph, ISU apparel, educational studies, and hospitality management
Natural dyes are being investigated as renewable and sustainable agricultural products. Iowa plants (fruits, vegetables, flowers, trees, and vines) will be examined for their potential as natural dyestuffs. Researchers planned to focus on ten new plant possibilities and continue working with 14 other substances. Questions to be addressed include identification of plant components or residue to be collected, time in which the collection should occur, the color produced, the consistency of the color, and the color's ability to withstand light and washing.

NEW Leveraging student expertise to solve food production marketing problems, 2 years
K. Palan, ISU College of Business
Teams of ISU business and agriculture students work with agricultural producers to develop marketing strategies and plans for their unique food and fiber products.

Life in Iowa Homecoming Institute, 3 years
N. Bevin, ISU Extension
Life in Iowa is an ISU undergraduate academic program that integrates classroom and experiential learning. After preparation on campus, students are placed in Iowa communities for ten weeks during the summer for paid internships and civic engagement projects. The Leopold Center sponsored five interns in 2003 and eight in 2004 to work with rural activities that focus on sustainable agriculture, food systems, and the environment.

NEW Local food capacity in north central Iowa: Nutritional need, economic strategy, 1 year
J. Libbey, Kanawha
The project will document the economic and community impacts of a one-year-old local food program in Wright County.

NEW Market analysis of alternative crop production in Iowa, 1 year
S. Andrlle, ISU Center for Transportation Research and Education
Investigators will seek information to evaluate the competitive advantages of marketing locally or regionally grown produce in Iowa and the upper Midwest. A software program will amass data on county-level retail sales for selected fruits and vegetables and link that data with current infrastructure characteristics (such as transportation and storage) to determine end-product cost.



NEW Supply chain options for bio-based businesses, 1 year
R. Lummus, ISU College of Business
This researcher investigates and evaluates existing supply chain structures currently used in bio-based businesses, and corollary examples of supply chains in businesses of all types (in the United States and abroad). Key characteristics are identified for each structure, and the benefits and disadvantages are analyzed for each type of structure.

NEW Supporting direct meat marketing in Iowa, 1 year
R. Karp, Practical Farmers of Iowa, Ames
The possibilities for marketing sustainable meat products via cooperative buying clubs, CSAs and a local produce company are to be studied. Subsequent workshops and marketing materials will help farmers use what is learned from the project.

NEW Web-based interactive decision model for determining economic feasibility of growing grapes and establishing a small winery for wine and grape juice, 2 years
M. Holz-Clause, ISU Agricultural Marketing Resource Center and G. Nonnecke, ISU horticulture
Entrepreneurs considering growing grapes and producing grape juice or wine will be able to use this interactive web site to see their best path to a successful business. The project also will produce three videos vignettes offering basic information about agritourism, operating a winery, and marketing options. Also featured are financial templates for grape growers and wineries.

Policy Initiative

NEW Defining farm types: Policy research considerations, 1 year
ISU Beginning Farmer Center staff
The common way for the government to classify U.S. farms is by gross annual sales. This project looks at other ways to categorize farms such as acreage, harvested cropland, or animal units. A simulation model will be created to gauge the impacts of a given policy on various sizes and types of farm operations.

NEW Determination of the impact of USDA's National Organic Program on organic farms in Iowa, 1 year
K. Delate, ISU horticulture and agronomy
The U.S. Department of Agriculture imposed new organic standards on farmers starting in October 2002. Nearly 400 Iowa organic growers will be contacted to determine the effects these standards are having on their operations.

NEW Forming agricultural bargaining units for a sustainable and equitable agriculture, 1 year
R. Ginder, ISU economics and D. Jarboe, ISU Center for Crops Utilization Research
The Organic Farmers Association for Relationship Marketing (OFARM) is a cooperative marketing and bargaining association in the upper Midwest. This case study will examine how the OFARM organizational structure could be used by other farmer groups in Iowa, Minnesota, and Wisconsin.

NEW A survival strategy for small and medium-sized farms, 1 year
R. Ginder, ISU economics
Some smaller farms in the Midwest have used cooperative agreements to remain competitive in a difficult marketing environment. These farms will be included in a database and the investigator will evaluate the effectiveness of eight of these groups in enhancing the economic standing of their members.

NEW Taking the next step: Building a platform for performance-based stewardship payments, 2 years
C. Flora, North Central Regional Center for Rural Development, Ames
How useful are conservation incentives in making significant environmental improvements? This portion of a larger study will unite predictions from a simulation model and an economic analysis in a southeast Minnesota sub-watershed to determine if and how the real cost of land change is supported by stewardship payments. Iowa's Rathbun Lake Watershed Alliance will be involved in making policy recommendations in this area.





grants (ongoing competitive)

Organic matter nutrient budgeting, 3 years

W. Goldstein, Michael Fields Agricultural Institute, East Troy, Wisconsin (ending 2004)

In conjunction with the USDA-ARS and Practical Farmers of Iowa, the project's goal is to work closely with farmer cooperators to develop and document a nutrient budgeting tool that will assist farmers in management decisions to cut excess nutrients from their farming practices without assuming extra risk. The project investigators and farmers are primarily concerned with tightening corn budgets and managing soil organic matter.

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

Gail Nonnecke, ISU horticulture (ending 2004)

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 suitable for growing grapes in Iowa. Project organizers learned that growers preferred to receive educational materials via field days and workshops; more than 80 percent of those producers surveyed stated they lacked information to use integrated pest management, so this may become a particular focus.

Livestock Management

Evaluating pork production systems for niche markets, 3 years

D. Stender, Cherokee County ISU Extension, Cherokee (extended to 2005)

The investigator is working with several northwest Iowa producers to obtain on-farm data for comparing hoop and confinement operations. A database is being constructed to compile information on seasonal environment, nutrition, genetics, and operator management differences in sustainable systems.

Pest Management

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

M. Owen, ISU agronomy (ending 2004)

What tillage practices are more effective at exploiting the biological characteristics of woolly cupgrass was the central question for this project. Two long-term experiments have been conducted to examine the optimum integration of several weed management strategies and tillage in order to effectively manage this persistent pest.

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, (formerly) ISU natural resource ecology and management (extended to 2005)

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. Field samples have been collected that provide information on the standing crop of above-ground biomass and plant phosphorus uptake. Root estimates have been less successful and additional sampling to a depth of 240 cm was planned for the 2004 growing season.

Impacts of managed grazing on stream ecology and water quality, 3 years

J. Russell, ISU animal science (extended to 2005)

The project investigated the amounts of sediment and phosphorus in the runoff from pasturelands managed by different systems. Demonstrations include upland grazing, riparian grazing, runoff plots, streambank erosion, whole-farm phosphorus flow estimates, and rainfall simulation. ISU researchers from three departments are collaborating with the Iowa Cattlemen's Association and the National Soil Tilth Laboratory on this project.

“That great mystery of time, were there no other; the illimitable,

silent, never-resting thing called time, rolling, rushing on, swift,

silent, like an all-embracing ocean tide, on which we and all the

Universe swim like exhalations, like apparitions which are, and then

are not: this is forever very literally a miracle; a thing to strike us dumb,

— for we have no word to speak about it.” — Thomas Carlyle

