

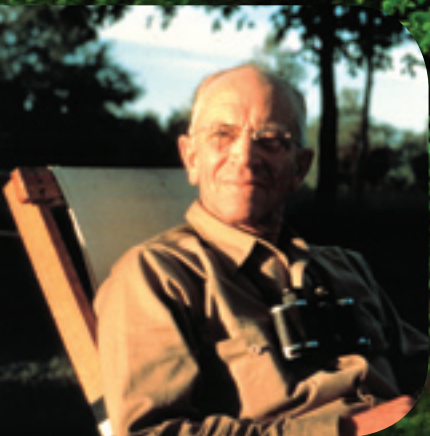


LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

Annual Report

07-08

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Aldo Leopold
1887-1948

the conservationist, ecologist, and educator for whom the Center was named.

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Edited by Mary Adams

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Mission: 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 negative environmental and socio-economic 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.

Vision: 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.

Jerry DeWitt (far left) watches as singer and President of Farm Aid, Willie Nelson (third from right), presents a check from the Farm Aid Family Farm Disaster Fund to the Iowa Grassroots Coalition after the 2008 floods.



The Leopold Center for Sustainable Agriculture 2008 Annual Report comes to you following a year of mounting uncertainties and seasons of challenge across Iowa.

As Iowans we have faced both financial and environmental upheavals that have taxed us on the farm and beyond the farm gate. Ravaging floods have raced across our land and moved untold amounts of precious topsoil. Our communities and people have suffered greatly from the devastating floods of 2008. Input costs and costs of production, transportation, and marketing have risen dramatically and have left many of our Iowa farm families struggling to survive in a sea of uncertainty.

The Leopold Center has placed a more decisive focus on programs and activities that we feel can make a difference for our farmers, communities, health, and the environment. We balance our unit's work across six core issues—Soil and Water, Agriculture of the Middle, the Bioeconomy, Food and Health, Livestock and Diversity and Local Policy. All of these core issues have several elements in common. Their goals and activities have the ability to make a lasting and positive impact on the land and landscape. All involve the local commitment and actions of individuals working together to make a difference. A description of these core issues can be found at our Leopold Center web site at www.leopold.iastate.edu/about/files/core_overview.pdf

This annual report provides some of the details and findings of our work with partners across Iowa this past fiscal year. It also offers a glimpse of those new investments that we have made in research and education to begin to tackle some of Iowa's critical challenges. Soil losses, grazing systems, pork quality, perennials on the landscape, land tenure,

human health and contemporary agriculture, and carbon footprints are just a few of the priority areas we've identified. Programs that bring productive change to Iowans and ensure both environmental and financial stability are central to our values at the Leopold Center. Please carefully study our report and come to us for additional information. We do not claim to have all the answers, but we do support the basic components of sustainability that can and will make lasting impacts across the state—for those who may choose this avenue to adapt to the changing agricultural picture.

We want to hear from you, and I also encourage you to contact members of our advisory board (listed on page 17). What are the untapped resources and pressing challenges that the Center should consider? Tell us what needs to be done. We will listen.

Jerry DeWitt
Director





Water was the impetus for the founding of the Leopold Center for Sustainable Agriculture in 1987. A band of far-sighted Iowa legislators looked at the state's ailing waterways and were moved to do something revolutionary to enhance and preserve these precious resources. Their Groundwater Protection Act provided funds for 23 different state programs related to water quality, including the Leopold Center at Iowa State University and related centers at the other two Regents universities.

Since 1987, hundreds of research projects, outreach events and education activities conducted by the Leopold Center have all had a connection to shielding, restoring or upgrading the state's waterways. It may have been to:

- encourage better nutrient management practices,
- support growing of crops that used less water or kept existing waters cleaner,
- promote production of local foods that required fewer resources for transport and packaging,
- establish wetlands or buffer systems to keep groundwater cleaner, or
- enhance water resources for wildlife or recreation uses.

Leonardo da Vinci
**Water is the driving force
of all nature.**

No one knows that better than farmers. Without water in the right amounts and at the right times, the most promising crops will not germinate, will not sprout, will not mature, and will not yield a bountiful harvest. There is little we can do to control rainfall, and rain dances have proved unsuccessful. So, it falls to us to protect and shepherd our existing water resources with the greatest care. All the best conservationists (and farmers) know that. Iconic naturalist John Muir said, "Take a course in good water and air; and in the eternal youth of Nature you may renew your own."

One of the Center's early interdisciplinary issue teams on agroecology spawned the Bear Creek streambank riparian project that eventually achieved national stature for its reclamation of a central Iowa waterway that had fallen on hard times. Later efforts to encourage planting of perennial plants and cover crops in agricultural rotations were aimed at helping to hold moisture in the ground where it could support crop and animal agriculture.





In 2008, an excess of water rather than a shortage was the problem for many Iowans. The staggering rainfall amounts were beyond our power to alter, but the floods that swept the state were a wakeup call for rural and urban residents who may have grown sanguine about the devastating power of the state's rivers on a rampage. The floods also offered an opportunity for all Iowans to rethink their relationship to the state's water resources and the ways in which we have altered the landscape for our convenience without fully acknowledging the possible outcomes in the face of rainfall that exceeds the norms. Whatever the causes may be, Iowa has endured two unprecedented flooding episodes in 15 years and we need to consider how to prepare better for the next deluge.

Water. We need enough of it to meet all our needs, it must be clean, it should be readily accessible, and it deserves our fierce protection. Agriculture must play a key role in ensuring that all of these things remain possible for Iowa's water resources.

Mary Adams, Editor

Floods return to smite the Iowa landscape

In 1993, the Leopold Center sustained one of the casualties of that year's "100-year" (or was it "500-year"?) flood when it chose to cancel a long planned, two-day summer conference due to flooding at Iowa State University, Ames, and many other locations around the state. In 2008, 15 years later, the Leopold Center didn't experience the grim flood outcomes firsthand as our colleagues at the University of Iowa and the University of Northern Iowa did. But the Center staff is painfully aware of the high toll the floodwaters exacted on Iowa's rural and urban areas, and most disturbingly, on Iowa's soils.

Center director Jerry DeWitt photographed some of the battered, stripped fields in northeast Iowa in the immediate aftermath of the floods. He was powerfully moved by the damage to soils, crops, and farms, particularly those that lacked the protection of relatively modest conservation practices such as terraces, buffer strips, crop residues, and diverse plantings. Some of his photos are shown here, along with his *Leopold Letter* commentary (below) on what he saw and felt in the ravaged fields.

"Every Iowa farmer—even every Iowa citizen—can walk the land. I say walk, not ride. Feel the soil under your feet. Allow the landscape to fill your eyes and set your future direction.

Kneel down and touch the soil. What can be done to protect this fragile resource? Take the time to mentally mark where water has left scars and gouges. What areas can become grassed waterways? Where could perennials be planted to safeguard against another one of Mother Nature's surges? Would a wetland make sense? Where did residue and shallow roots lose the battle against rain?

These are things we all need to consider."





Iowa Learning Farm cooperator Barbara Johnson, Page County, discusses the ILF project with an Iowa lawmaker.

Iowa Learning Farm: Building a Culture of Conservation

Concerns about Iowa's impaired bodies of water, an inflationary land market, continued soil erosion, and expansion of the hypoxic zone in the Gulf of Mexico all point to a pressing need for improved conservation. As the nation pursues independence from fossil fuels and economic growth through the production of plant-based fuels and fiber, the full scope of land management options must be considered. The Iowa Learning Farm (ILF) project is positioned to further the statewide initiative of building a "Culture of Conservation" that will support on-farm practices leading to improved soil and water quality in Iowa.

The five-year project, initiated in 2005, is currently coordinated by Leopold Center director Jerry DeWitt and is thriving under his second year of leadership. Using a grassroots approach, the project encourages all Iowans to play an active role in keeping Iowa's natural resources healthy.

Working closely with 28 cooperator-farmers across the state, on-farm research is being conducted in agronomy, economics, environment and sociology to demonstrate that conservation farming practices are sustainable *and* profitable. Practices being studied include no-tillage, strip-tillage, cropping systems, and residue and nutrient management.

In addition to the cooperators and the trials conducted on their farms, ILF conservationists have been added to support the project. These individuals, from farming and non-farming backgrounds, serve as project spokespersons. They are effective opinion leaders and positive role models who practice, understand and promote commitment to a Culture of Conservation. They speak at field days, and to local service organizations and youth groups.

Under DeWitt's guidance, the Iowa Learning Farm project has exposed many Iowans to the importance of preserving the state's resources. Outreach efforts in support of the project include mass media, print and on-line resources. The portable conservation systems rainfall simulator has traversed the state for two summers, making appearances at county fairs, watershed group meetings, and youth educational events to demonstrate the potential impacts of rainfall on various land treatments, high amounts of residue and an urban parking lot. A seven-minute video "Building a Culture of Conservation: Iowan to Iowan" debuted at the Soil and Water Conservation District (SWCD) annual conference in November and each of the 100 Iowa SWCD offices received a copy.

The ILF project is a unique partnership of farmers, educators, state and federal agencies, conservation groups, the research community and the general public. The ILF core administration team includes representatives from four ISU departments: Agronomy, Agricultural and Biosystems Engineering, Economics and Sociology.

The Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources, Natural Resources Conservation Service, Iowa State University Extension, Conservation Districts of Iowa, Iowa Farm Bureau Federation and the Leopold Center are ILF partner organizations.



ILF cooperater Doug Nolte hosts a field day on his farm in Muscatine County.



Thousands have lived without love,
not one without water.

W. H. Auden

Marketing and Food Systems Initiative work sparks web site viewing

Words to warm you: Reading Leopold

In the dead of winter, nature needs a shot in the arm, so February has Groundhog Day with its hopes for spring. Now March has Aldo Leopold Weekend to perk up winter-weary citizens. First begun in Wisconsin in 2000, this celebration of Leopold's life and legacy has spread to other states and in 2008, it reached Ames. More than 75 people from central Iowa gathered in the Ames Public Library to hear 20 people read 16 essays from Leopold's nature-centered classic, *A Sand County Almanac*. Erv Klaas, a retired ISU natural resources professor and avid ornithologist, organized the event with support from the Leopold Center and the Aldo Leopold Foundation. A slide show of historic scenes from Leopold's life gave the audience added background to the stirring words, as well as a closer look at the famous Shack, now a conservationist's shrine near Baraboo, Wisconsin. Among those sharing Leopold's words were a farmer, university students and a professor, several retirees, and people from local environmental organizations. Klaas hopes to make it an annual event (since every winter can use more lightening influences) and would like to see more students participate in the 2009 event.

Two of the most popular items on the Leopold Center web site (www.leopold.iastate.edu/) this year were the "Food, Fuel and Freeways" report and a map of Iowa fruit and vegetable growers.

FY2008 monthly usage for the web site was 20 percent above previous year's totals.

- 2.3 million hits for the year
- 41,000 PDFs downloaded per month
- 23,500 visitors (43,900 page views) per month
- 29,174 visitors in October 2007, one-third occurred on the day that a Reuters news story ("Do food miles make a difference to global warming?") quoted Rich Pirog and linked to the Center's 2001 "Food, Fuel and Freeways" report by Pirog



Media contacts expanding

For all Center staff members, there were 270 requests in 2007-08 for information from national, international, and state venues. Among those asking for information from Center staffers were CNN, PBS News Hour, *New York Times*, *Washington Post*, Google News, *Newsweek*, *Boston Globe*, National Public Radio, *Consumer Reports* and other special interest publications such as MSN Money, *Women's Health* and *Eating Well*. The Center continues to work with traditional agriculture interest outlets such as *Wallace's Farmer* and *Successful Farming* and Iowa newspapers and electronic media.



2007 Spencer Award winner Laura Krouse multi-tasks

Laura Krouse, who was honored with the 2007 Spencer Award for Sustainable Agriculture, quite literally does it all. From her 72-acre farm near Mount Vernon, she operates Abbe Hill Garden, a Community Supported Agriculture enterprise; and a 104-year-old open-pollinated seed corn business. Krouse also taught biology full-time at Cornell College. In her spare time, she participates in many activities of the Linn County Soil and Water Conservation District and makes public presentations on the practical virtues of sustainable agriculture. She has hosted Practical Farmers of Iowa field days, and worked with ISU professor Kathleen Delate on pest management trials for squash and heirloom vegetables.

2007 is the first year that the award has gone to a successful small market farmer. In this case, Krouse's farm operation reflects the power of diversified cropping enterprises coupled with a restored wetland and constructed pond used for crop irrigation. The award was presented to her at the 2008 annual PFI conference where Krouse used her acceptance speech to muse (tongue-in-cheek) about the changes she'd like to see in Iowa agriculture.



This land, this water, this air, this planet
- this is our legacy to our young.

Paul Tsongas





O-foods, under scientific review

Claims about organic foods (positive and negative) abound, but what have scientists actually discovered about the quality, nutritional characteristics and production practices used in organic agriculture?

A unique Leopold Center project collected peer-reviewed articles from scientific literature to show what has been verified regarding organic agriculture. The resulting information set appears in a web-based resource designed to help answer some of the pressing questions people have about organic products.

Findings from more than 70 peer-reviewed, scientific articles about organic agriculture are summarized at www.organicag.org. The site organizes the research by topic, from animal health and welfare issues to information about poultry, meat, grains and fruit and vegetables. "This is not an attempt to recommend organically grown food over conventionally grown food," says Center Director (and ISU entomology professor) Jerry DeWitt, who coordinated the special project. "We are providing the information so that people can make their own decisions."

The original literature review was done in 2006 and 2007 by David Kwaw-Mensah, then a doctoral student in the Department of Agricultural Education and Studies at Iowa State University. He worked under DeWitt's direction to compile the material. Summaries of new, thoroughly vetted scientific research will be added to the web site as they become available.

The project summaries do not promote organically grown food or imply that organically grown food provides nutritional health benefits, perceived or otherwise. Research shown on the web site was selected if it was published in a scientific, peer-reviewed journal or publication, and it involved a comparison to or investigation of a specific trait of organic food.



Neil Hamilton steps down from Center Advisory Board

It was August 18, 1987 when Neil Hamilton attended the first-ever meeting of the Leopold Center Advisory Board. The Groundwater Protection Act had been passed earlier that year and legislative founding fathers Paul Johnson and Ralph Rosenberg spoke passionately to the group about the mission of the Center at that first gathering. The board's first order of business was to hire a director, no small task as this person would shape the Center's formative programs and policies. They chose well in selecting Dennis Keeney who would serve for ten years. The next action of the fledgling board was to judiciously award the first batch of research funds to show the state that it was time to get serious about sustainable agriculture. On April 27, 1988, Hamilton was chosen as the first chair of the advisory board. He held that office again in 2007-2008, and announced his resignation from the board at the end of his second term as board chair.

For the past 21 years, Neil Hamilton has watched the Center's history unfold. The early struggles to define sustainability and make people believe it was a workable concept, the creation of a robust competitive grants programs, the nurturing of the issue teams, the leadership changes, the challenges of dealing with state budget cuts, the shift to a more comprehensive view of sustainability that includes food and health. Through it all, he has been a staunch supporter, the source of much good counsel, the maker of critical connections, and on occasion, the one who asked the hard questions that needed to be raised. For all of this, and for his unwavering commitment to the ideals of Aldo Leopold, we are profoundly grateful to Neil Hamilton.

Even though his time on the board has ended, he will continue to collaborate with the Center on behalf of ideas and causes he considers important to Iowa agriculture. He continues to be active in Iowa local food efforts whose work intersects with the Center's Marketing and Food Systems Initiative. He is on the boards of the Iowa Natural Heritage Foundation and the Seed Savers Exchange, two groups that share common environmental interests of the Center. The Drake Agricultural Law Center, where he serves as director, will be working with the Leopold Center's Policy Initiative on a project to study the relationships among land tenure, sustainability, and stewardship.





SARE Conference in Kansas City,
March 25-28

Recipients of Chipotle Scholarships attend SARE anniversary event

Clockwise from top left, next to Jerry DeWitt, Leopold Center Director (in denim shirt):

Brian Donaghy, Julie Donaghy, Kate Brammeier, Diane Rasmussen, Craig Griffieon, Clint Brown, Tom Sibbersen, Nick Griffieon, Donna Prizgintas, Doug Webster, Tanya Webster (holding Taliyah Webster), Cindy Pittz and Vaughan Pittz

Chipotle dollars
send farmers to
SARE event



The 2007 Chipotle calendars have been recycled, and their bountiful burritos are a happy memory. But part of the proceeds from these calendar sales, a gift from Chipotle to the Leopold Center, allowed the Center to sponsor 10 Iowa farmer scholarships to the March 2008 national Sustainable Agriculture Research and Education (SARE) conference in Kansas City. The recipients were beginning farmers, organic farmers, farmers looking to make a generational transfer of their land, small market farmers, and farmers who wanted to make the best use of their land and resources.

Some of their comments:

- “The most important concept I learned at the conference was that farming cannot be done alone. I knew this going in, but I was reassured of the notion and offered many examples and possibilities for opportunities to work with others at my farming venture.”
- “I found the lectures on farmscaping and building soil the organic way especially helpful. My family and I are already seeing other positive effects from my attending the conference.”
- “My personal highlight was the session “Success with Renewable Energy.” The two farmers using solar energy to heat their high tunnels in New Mexico and brew their own alcohol in Missouri were just great. I brought home as much as I could remember and passed it on to a vegetable grower and his son in my hometown.”
- “Although the seminars and key speakers were wonderful, truly the most value we gained from attendance was the opportunity to network and the people we met. We found everyone to be so open to sharing their own experiences and resources, and very encouraging to us to take steps to grow our future on the farm. The many talented people we met provided us with not only a wealth of new knowledge, but confidence in knowing that we are on the right track, and encouragement to grow our operations.”
- “The great thing about SARE is that you never know what you might learn. Just like the Practical Farmers of Iowa meetings that we have attended, you see what other folks are doing and it inspires you to change even more than you realized. SARE offers us all a lot of help with a little ingenuity and a desire to make things even better.”

More reports from the farmers at the SARE conference appear at www.leopold.iastate.edu/SARE/reports.html.

Leopold Center featured in Ohio university history project

The Leopold Center has had plenty of experience handing out money to fund worthy research projects but, until now, no experience as the subject of an academic study. That changed with the 140-page paper written over the past two years by John F. Obrycki, Jr., at Miami University in Oxford, Ohio.

Obrycki's senior honors project, titled "Broadening the Communities to Which We Belong: Iowa, Agriculture, and the Leopold Center for Sustainable Agriculture," provided a fascinating look at the Center's beginnings with the Iowa Groundwater Protection Act of 1987, its significant accomplishments and remaining challenges over two decades of existence. Obrycki interviewed 53 board members, legislative founders, staff members, and stakeholders, as well as reviewing records of grants and outreach efforts, and a variety of historical documents about the Center's activities. (See the report on the web at www.leopold.iastate.edu/pubs/other/files/Obrycki.pdf)

In addition to sharing results from his project with the Leopold Center staff and the advisory board, Obrycki presented a portion of it at the Forum on Agricultural and Rural History at Mississippi State University, April 4-5, 2008. He also presented during the Miami History department's capstone presentations on April 9, Miami's Undergraduate Research Forum on April 16, and at the Senior Project Conference for the academic division that contained his Environmental Studies major on April 30.

John F. Obrycki was a Benjamin Harrison Scholar, a member of the university honors program and recipient of a Provost's Academic Achievement Award. His research on the Leopold Center was supported by a College of Arts and Science Dean's Scholar Award and the Miami University honors program. His name may be familiar to those who have followed the Center's progress, because his father, John J. Obrycki, is a former ISU faculty member in entomology and Leopold Center research grant recipient, who chaired the Leopold Center's issue team on integrated pest management from 1990-1995.

Nothing is softer or more flexible than water, yet nothing can resist it.

Laotzu




John F. Obrycki, Jr.

Obrycki's introduction

It is the argument of this project that the Leopold Center for Sustainable Agriculture at Iowa State University provides a model* for an institutionalized approach to agricultural issues. Located at a land-grant university, created through legislative action, and currently operating on a budget of \$2 million, the Center's approach to agricultural issues is a combination of economic, social, political, and ecological concerns that seeks to find production alternatives that are beneficial in the long-run for people and the planet. Furthermore, the Center brings together a broadly based agricultural community comprised of those within and outside of university settings to effectively conceptualize issues and enact change. Established in 1987 and named after Aldo Leopold, an important conservationist and wildlife management expert in the first half of the twentieth century, learning more about the Center's research efforts sheds insight into the current structure of the American agricultural system and the opportunities and limitations that exist in striving to shift the system towards more sustainable production methods. A dual practical and philosophical approach to fostering change in Iowa's farming system forms the foundation of the Center's efforts. The asterisk represents the constraints to the Center as a model from economic, social, and political factors. However, during the past 20 years the Center and the research it funds have been able to overcome some of these obstacles. The Center deserves closer investigation due to its wide-reaching implications and lessons for shifting agricultural production practices towards more sustainable methods.





Kirschenmann splits time
between Leopold Center
and Stone Barns



In the world there is nothing more
submissive and weak than water. Yet for
attacking that which is hard and strong
nothing can surpass it.

Laotzu

Fred Kirschenmann, Leopold Center Distinguished Fellow, spent much of the year working part-time for the Center and part-time for the Stone Barns Center for Food and Agriculture in Pocantico Hills, New York, an hour north of New York City. The two centers agreed to explore issues of mutual interest with a view to enriching each other's work, and Kirschenmann is acting as the principal liaison between the two groups. Both centers are eager to learn more about the challenges and opportunities inherent in developing a more sustainable agriculture in both rural and urban communities. They signed a Memorandum of Understanding, which is effective for one year with options to renew the agreement. Both will share the cost of Kirschenmann's salary under this arrangement.

During the initial phase of the relationship, Kirschenmann's responsibilities at Stone Barns will be to help secure a full-time executive director for the Stone Barns Center, work with the farmers at Stone Barns to improve sustainability, bring some of the knowledge and experience of the Leopold Center to Stone Barns, help guide the organization, assist with fundraising and oversee the transition to a full-time executive director. At the same time he will bring some of the experience at Stone Barns to the Leopold Center and assist in developing relationships with Leopold Center constituencies where such relationships may be useful to Iowa.

Agriculture of the Middle and the Association of Family Farms

Kirschenmann continues to provide leadership to the Agriculture of the Middle (AOTM) project, identified as one of the Leopold Center's core issues. The conceptual framework for AOTM has been completed and the results appear in a volume published by MIT Press entitled *Food and the Mid-Level Farm: Renewing an Agriculture of the Middle (2008)*, edited by Tom Lyson, G.W. "Steve" Stevenson and Rick Welsh. Kirschenmann, Rich Pirog, and Mike Duffy, all associated with the Leopold Center, contributed to the book.



The Association of Family Farms (AFF), the business development component of AOTM, and its 22-member board of directors and eight-member executive committee are seeking ways to make the vision articulated in the conceptual framework a reality for the nation's midsize farmers. The National Farmers Union has agreed to partner with AFF to help aggregate midsize farms into marketing networks. These networks will provide a link to business enterprises interested in bringing the foods produced by this unique marketing arrangement into the marketplace in Iowa and the United States. Additional funding currently is being sought to launch this next phase. Meanwhile, the research component of AOTM continues its work to support the AFF effort under the direction of Steve Stevenson at the University of Wisconsin. This NC 1036 group meets annually to discuss research initiatives and encourage research projects that serve the needs of the AOTM agenda.

Outreach

Kirschenmann continues to maintain an active speaking schedule to carry the message of the challenges and opportunities of sustainable agriculture to various audiences throughout the country. He estimates that he makes an average of eight presentations a month on sustainable agriculture issues. He notes that awareness of sustainable agriculture has been increasing dramatically, especially among young people. This past year he also noted greater interest in sustainable agriculture among faith communities and health care communities. The exchange of information that takes place at these gatherings not only extends the work of the Leopold Center, but also enriches the Center's work by virtue of the information provided by others similarly engaged, which Kirschenmann brings back to the Center.

Among his many presentations this year:

- Keynote address to the Food Systems Leadership Institute, a group of leadership fellows, most from land grant universities, at the University of Vermont in Burlington
- William A. Albrecht Earth Day Lecture, University of Missouri, Columbia



Rich Pirog

- Keynote at the Connecting Farms, Food and Communities Conference, Virginia Cooperative Extension
- Lecture at Annual Farm Appreciation Breakfast, Mason City Chamber of Commerce
- Keynote speech at the Small Farms Conference, Oregon State University, Corvallis

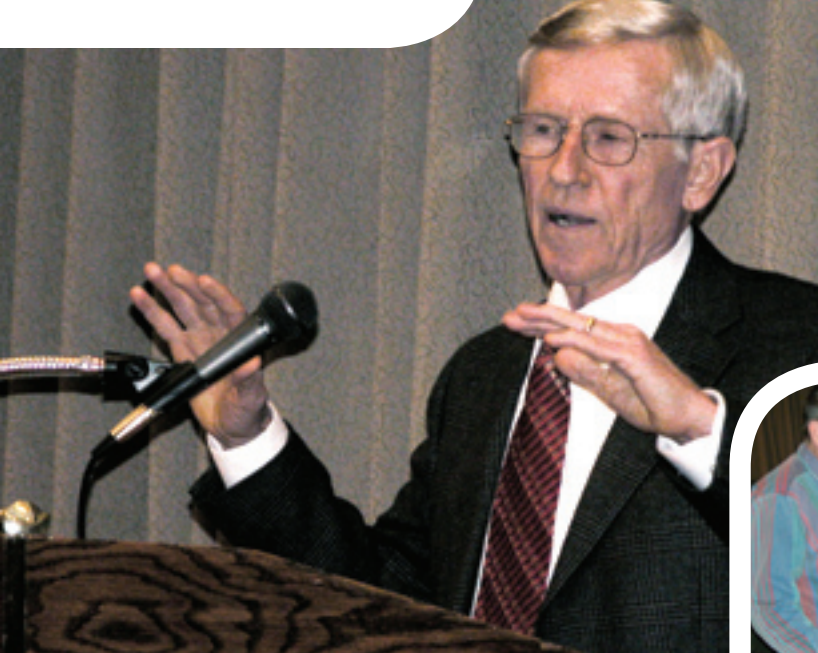
Whiterock Conservancy

Kirschenmann serves as chair of the Whiterock Conservancy (WRC) board of directors and has worked closely with the director and staff to develop the ecological initiatives at the conservancy. Elizabeth Hill, coordinator of the ecological work at the WRC, also collaborates with faculty and graduate students at Iowa State University. The Conservancy eventually will encompass 5,000 acres of land in west central Iowa donated by the Roswell Garst family.

Research

Kirschenmann continues to search the growing body of sustainable agriculture literature and brings information relevant to the Leopold Center's work to the attention of staff. This expanding amount of literature suggests that the concept and application of sustainable agriculture practices has matured immensely in the last decade and all benefit from this work.





Annual Shivers lecture brings economist John Ikerd to ISU

“Family Farms in an Era of Global Uncertainty” is a subject that strikes a responsive chord with all those concerned about the next steps for midsize operations. John Ikerd, professor emeritus of agricultural economics at the University of Missouri, used that as a starting point for his February 24 address as part of the annual Shivers Lecture Series sponsored by the Leopold Center and Gamma Sigma Delta.

From Ikerd’s perspective, the choices are clear. He said: “In times of economic and political chaos, which would you rather depend on to provide food for the nation? Industrial farms or family farms? Which would you rather rely on for your own food? Global corporations or local family farms? When Americans run out of credit, and the economy collapses, which would you rather rely on to help build a new sustainable

economy? Industrial farms or family farms? Which would you rather rely on to support your local economy? Global corporations or local family farms? If the disparity in income grows so wide that the poor can no longer afford enough food to survive, which would you rather count on to feed the hungry? Global corporations or family farms? If health care costs climb beyond the reach of even the middle class, which do you think would show more concern for public health? Industrial farms or family farms?”

Read the entire speech on the Center’s web site at www.leopold.iastate.edu/news/pastevents/ikerd/familyfarms.pdf



Water is a finite resource that is essential in the advancement of agriculture, and is vital to human life.

Jim Costa

First Keeney lecture focuses on health links to agriculture

“The Agriculture-Public Health Connection” was the provocative topic of a speech by Dr. Robert Lawrence on October 22. Lawrence, who directs the Center for a Livable Future at the Johns Hopkins University Bloomberg School of Public Health in Baltimore, Maryland, presented the lecture in honor of Dennis Keeney, the Leopold Center’s first director.

Keeney selected Lawrence as the speaker based on their interaction with a grant program that studied the relationships modern food production practices have with human health. Lawrence has spent the past decade pointing out the complex interactions between public health, diet and the environment and food production systems. His speech touched on sub-therapeutic use of antibiotics in animal production, conditions in confinement operation, the obesity epidemic, increased cases of Type II diabetes, and the question of “harm reduction” as an approach to agricultural issues.



Dr. Robert Lawrence was the first Keeney lecturer



Dennis Keeney (left) and Joe Colletti



Lawrence presents seminars on campus.



Leopold Center for Sustainable Agriculture FY 08 July - June

Finances

In fiscal year 2007-2008, revenue for the Leopold Center included \$1.803 million from nitrogen fertilizer and pesticide registration fees collected under rules established by the Iowa Groundwater Protection Act of 1987. This includes a delayed payment of \$235,000 from the prior fiscal year. Had this amount not been delayed, revenue would have decreased 3 percent or \$48,000 from the previous year. General Revenue Program funds from state appropriations to Iowa State University totaled \$579,907 for the same period.

OPERATIONAL EXPENDITURES:

Salaries & Benefits	\$709,509
Travel	32,818
Board Retreat	583
20th Anniversary Expenses	17,814
Services, Information & Communication	101,104
Supplies	32,499
Utilities/Maintenance & Repair	1,513
Total Operational Expenditures	<u>\$895,840</u>

RESEARCH AND GRANTS:

Competitive and Initiative Grants	\$900,918
Wallace Chair Support	20,000
PFI Partnership	50,000
LTAR Support	50,000
Ag Systems - Management & Performance Initiative	25,000
Grape and Wine Program	25,000
Graduate Assistantship Support - AnSc	20,000
Graduate Assistantship Support - GPSA	20,590
Total Research and Grants	<u>\$1,111,508</u>

INITIATIVE AND OTHER COMMITMENTS:

Ecological Systems Research	\$4,021
Marketing & Food Systems Research	49,092
Policy Research	14,892
Other (Discretionary/Cost Share)	7,296
Total Initiative Commitments	<u>\$75,301</u>

TOTAL	<u>\$2,082,649</u>
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Staff

Leopold Center Advisory Board

Jerry DeWitt**

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



Leopold Center Funds aid sustainable ag graduate students

The ISU Graduate Program in Sustainable Agriculture (GPSA) started the fall 2007 term with two new M.S. students partially supported with Leopold Center research assistantship funds: Ben Eland and Aimee Ponteri. Charles Sauer, who provides program support for the GPSA, reports on these two students:

Ben Eland, M.S. **Department of Sociology**

Eland was matched with sociology professor Cornelia Flora as his faculty advisor and received part of his funding from her. She assigned him to work on a community development project in Latin America. He possessed strong analytical skills and fluency in Spanish from an extended stay in Honduras, making him an ideal candidate for this assignment.

Eland excelled in his class work and assigned research associate duties. However, in the past, he spent extended periods working in a monastery and, as the term progressed, found himself drawn back to this life. He decided to withdraw at the end of the fall term to return to the monastery to re-evaluate his personal path. He withdrew in good standing and took steps to ensure he can return to ISU if he chooses to resume his graduate study.

Aimee Ponteri, M.S. **Department of Plant Pathology**

Ponteri was matched with Forrest Nutter, in the Department of Plant Pathology, as her faculty advisor and received a portion of her support from him. She completed her undergraduate work in horticulture with honors and was eager to train at the graduate level in organic production methods.

Aimee's performance in class and her research associate duties was outstanding, but she gradually came to the realization that she was not personally ready to embark on graduate study. She decided to withdraw at the end of the term and take employment in her home state of Texas. She departed in good standing with the GPSA.

New students

Since Eland and Ponteri were both assigned to the Leopold Center account, their withdrawals left funds available to assist others. The GPSA program allocated the remaining funds to two new students who entered the program in spring 2008: Andrew Herringshaw and Claudia Prado-Meza. Herringshaw was matched with Mike Duffy in the Department of Economics as his major professor; Prado-Meza was teamed with Cornelia Flora in the Department of Sociology.

They reported on their activities during FY2008:

Andrew Herringshaw, M.S. **Department of Economics**

Beginning in January 2008, I was immediately involved with the Iowa Learning Farm project. I have developed partial budget analyses, erosion estimates, and presentation materials for the project. Meeting with Natural Resources Conservation Service personnel and personal study have given me competence in using the RUSLE2 erosion prediction program. This is the first year we have been able to apply its estimates alongside the economic data to show the changes in soil conservation with differing tillage practices.

If there is magic
on this planet, it is
contained in water.

Loran Easley



Agricultural Systems Initiative

integrates crops and environment



I have worked with Mike Duffy to further his research in putting a value on soil organic matter and carrying this over to establish a dollar value on what is saved by preventing the erosion of a ton of Iowa topsoil. Other work with Duffy has included interpreting and analyzing the results of the 2007 landowner survey. I have discovered a few trends worthy of further scrutiny, which I will continue to investigate in the next year. I have begun collaboration with a watershed researcher to determine cost of implementation and value created by use of various conservation practices, including grassed waterways and terraces.

Claudia Prado-Meza, Ph.D.

Department of Sociology

My project is "Assessing the Impacts of ICE Raids on Midwestern Packing Plant Communities and Devising Asset-Based Strategies for Community Futures."

Over the past six months, I conducted interviews with various members of the Marshalltown community to understand the impacts of the Immigration and Customs Enforcement (ICE) raid, which occurred December 12, 2006. The interviews were conducted in both Spanish and English with the Anglo and Latino business communities, non-governmental organizations, governmental agencies, and people affected by the raid.

I conducted focus groups with community members to understand the impacts of the raid and also transcribed these interviews to prepare an analysis of the information that was shared with me.

In addition to the interviews, I reviewed articles, editorials, and letters to the editor that referred to the events on December 12 with the intent of understanding the general language used by the population in relation to the questions surrounding immigration. The project is now entering the final stages; we are preparing a final report to be completed in 2008.

The ISU College of Agriculture and Life Sciences created a systems-centric research initiative in 2004 to consider management and performance of agricultural systems. The interdisciplinary basis for the program allowed for accumulation of expertise from experts on various angles of agricultural systems. Program coordinator and agronomy professor Richard Cruse shared information on the recent activities of the project using the \$25,000 annual contribution from the Leopold Center as part of its strategic investment program.

Cruse says, "Leopold Center funds were used to support workshops with farmers identifying what they will accept and what they cannot accept (or will not accept) regarding the cellulosic biofuel industry. Three separate meetings were held with farmers. Each meeting was dominated with uncertainty, to a large extent because farmers did not understand what might be expected of them and because of their lack of knowledge about this developing industry. As a result, subsequent meetings have been held with farmers and scientists discussing multiple issues surrounding the feedstock supply chain. More meetings are being planned to link industry with farmers."

In addition, a major portion of Leopold Center funding in FY2007 was used to support further work on the project "Assessing alternative crop choices and environmental impacts of the bioeconomy: An integrated landscape approach." Principal investigator was Silvia Secchi, Southern Illinois University, Carbondale; and co-principal investigators were Philip Gassman, Center for Agricultural and Rural Development, Iowa State University; and Mike Duffy, Department of Economics, Iowa State University. Collaborators included Jimmy R. Williams, Blackland Research and Extension Center, Texas A&M University; and James R. Kiniry, USDA/ARS Grassland Soil and Water Research Laboratory.

The first stage in their analysis was a review of recent scientific literature on three basic issues related to the production and use of switchgrass in the bioeconomy. They looked at production and management, supply analysis and logistics, life cycle analysis and carbon sequestration potential. Preliminary investigations show that switchgrass grown for profit is not a low-input feedstock – at least in terms of nitrogen. While having perennial cover will have benefits on flow regulation and evapotranspiration (ET), the crop is still heavily fertilized. Lower rates would likely require compensation for lost yield to farmers. Moreover, the price that makes switchgrass economically competitive with corn and/or soybeans depends very much on the absolute level of row crop prices. The Chicago Board of Trade prices for both corn and soybeans would make switchgrass production a much less likely proposition. They found that switchgrass prices would have to be higher than \$100/metric ton in that case for its production to occur in the state.



Practical Farmers of Iowa renews ties with the Center



Discussion at the field day held by Jan Libbey and Tim Landgraf.

Field Days



Angela Tedesco (far right)

Practical Farmers of Iowa (PFI) is perhaps best known for its on-farm research and demonstration efforts that allow farmers to work with researchers to explore specific, identified barriers to profitability and stewardship. With financial and operational support from the Leopold Center over the last decade, PFI has been able to increase its demonstration activities, and a new Memorandum of Understanding was drawn up in 2008 to continue the relationship with the Center for five more years.

Cooperators' Program

The Cooperators' Program was expanded to include more farmers and projects. At the PFI Cooperators' meeting in February, farmers set their research and demonstration priorities for the coming years. Among the priorities were cover crops, working with more perennial grasses, ecosystem monitoring, and extending the growing season. Projects funded by the Leopold Center include a comparison of different tomato training systems to find the best way to keep disease pressure to a minimum. More than 30 participating farm families were involved in a variety of projects.

Within the PFI Cooperators' Program, Leopold Center support allowed PFI to:

- Expand the number of farmers taking part in the Cooperators' Meeting;
- Pair farmers with Iowa State University researchers at the Cooperators' dinner and elsewhere, to stimulate ideas and the flow of information;
- Work synergistically with the ISU On-Farm Research and Demonstration Program to implement farmers' priorities; and
- Continue existing Cooperator projects and feature farmers as leaders in sharing the results of those projects.

I believe that water is the only drink for a wise man.

Henry David Thoreau



Also in this last fiscal year, PFI summarized on-farm research from 2004-07 and published the summaries in print and on the web at www.practicalfarmers.org/resources/PFI-On-Farm-Research-and-Demonstration-Reports.html.

PFI gathering in January

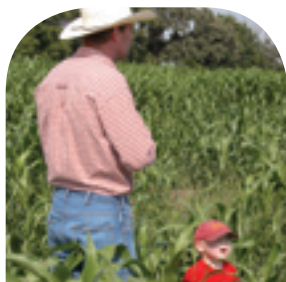
“PFI’s annual conference is like a family reunion,” a member recently commented. Leopold Center support was critical for the success of the January 2008 PFI annual conference, which drew 430 people. The conference included ample time for networking and also a blockbuster schedule of speakers. Highlights included sessions on beginning farmers, grazing, on-farm energy, and samples of local foods. The producers of the film “King Corn” showed their documentary and led a discussion about the current commodity system afterwards. The PFI Sustainable Agriculture Achievement award was given to Kamyar Enshayan from the Center for Energy and Environmental Education at the University of Northern Iowa.

Telling a story is often the best way to communicate information. In this last fiscal year, Leopold Center support allowed Practical Farmers of Iowa to continue to tell the story of Iowa’s conservation farmers—who they are, what production and marketing questions they have faced, and their solutions. PFI developed these stories, or profiles, for their newsletter and web site, and also for distribution to state media outlets.

Field days attract 1,000+ guests

PFI field days in 2007-2008 garnered 1,065 attendees at 24 events, an average of 44 per event. Among the topics and highlights of those field days:

- Buy Fresh, Buy Local event in Davenport
- Discussion on Community Supported Agriculture near Granger
- Swine herd health near New Hampton
- Leopold Center Anniversary Recognition event near Sutherland
- Introduction to artisan foods and samples of vinegar, wine, cheese, and olive oils, plus information on Iowa place-based foods at Surya Nagar Farm near Fairfield
- On-farm chicken processing demonstration and discussion on how to select heritage birds for breeding in a small flock program with expert Glen Drowns, held at Sondra Feldstein’s farm near Bondurant
- Craig Griffieon explained corn breeding for nutritional quality, and son Nick demonstrated his homemade biodiesel project at their farm near Ankeny
- Tom and Irene Frantzen drew 70 to discuss holistic management and marketing organic, plus the Conservation Security Program, which rewards them for their whole-farm approach to conservation



Midwest Grape and Wine Institute flourishes

The Leopold Center supplied \$25,000 in strategic investment funds to support the work done by Murli Dharmadhikari, ISU Extension enologist and director of the Midwest Grape and Wine Industry Institute. He oversees the work of the institute and performs research and extension duties related to Iowa's wine industry.

Enology extension activities conducted by Dharmadhikari in FY2008 included:

- Disseminating technical information to wine industry members through visits, individual consultations, e-mails and other means of communication. He called on many wineries to offer technical advice on an individual basis.
- Making numerous technical presentations (at seminars and workshops) on a variety of enology topics to industry groups around Iowa. Sites included multiple locations in eastern Iowa, Oskaloosa, Madrid and Farnhamville.
- Conducting an advanced wine microbiology short course, organizing a sparkling wine symposium and helping plan the annual Iowa Wine Grower's Association Conference.

A wine laboratory has been established at ISU for service, training and research. Assistance provided to Iowa winemakers included:

- Trouble-shooting for problem wines,
- Wine quality control training,
- Sensory evaluation and certification of wines to the members of Iowa Vintner's Quality Alliance (VQA), and
- Enology research and development of innovative vinification technology.



When the well is dry, we know the worth of water.

Benjamin Franklin

The Midwest Grape and Wine Institute was the leader in organizing the “Vintner’s Wine Quality Alliance” (VQA). The goal of the alliance is to position Iowa as a premium Midwestern wine-growing region using cold climate grapes. VQA members will produce wines according to the established wine quality standards and will be allowed to display a seal of quality on the wine bottles.

The Institute is engaged in several viticulture research projects:

- Rapid determination of *trans*-resveratrol in red wine by solid phase microextraction (SPME).

Trans-resveratrol (3,5,4'-trihydroxystilbene or TRA) was found in grape canes, skins, seeds, stems and wines, and belongs to the poly-phenol group that has been shown to have cancer-preventing properties, boost cardio-protection and antioxidant activity, and inhibit platelet aggregation and anti-inflammatory activity.

There has been considerable public interest and a growing number of scientific studies linking certain phenolic compounds in grapes and wines, particularly TRA, to human health benefits.

The cold-hardy grape varieties grown in Iowa also show greater resistance to certain diseases than the vinifera (European wine) grapes. This could be due to higher levels of resveratrol in Iowa grapes. In a recent preliminary study, researchers found significant levels of resveratrol in some Iowa wines (see table below). More research is needed on this topic, but it appears that Iowa wines may be marketed as having significant resveratrol content and thus offer greater health benefits to consumers.

- The Institute participates in laboratory and vineyard evaluation of wine grape cultivars for adaptability to Iowa’s climatic conditions and to determine harvest fruit composition of cold-hardy varieties.
- Grape and wine studies are needed to address many additional issues facing the state’s wine industry. The Institute has begun research efforts and is seeking other opportunities to lead future research projects.

In other program activities, the Institute enologist/director taught a new grape and wine science course during the winter semester at ISU, served as chair of the American Society for Enology and Viticulture Eastern Section, judged wines in an Indiana wine competition, and was successful in securing funds from the Iowa Legislature to support the Institute’s work.



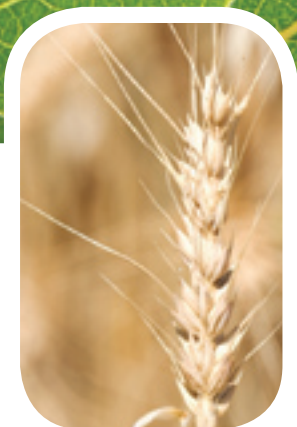
Amount of *trans*-resveratrol from six Iowa red wines

Sample number	Winemaker	Wine variety	Vintage	trans-/cis-(%)	RSD (%) (n=3)	trans-Resveratrol (ug/L)	RSD (%) (n=3)
1	Tassel Ridge	FOCH	2006	6.67	8.8	58.4	3.0
2	Tassel Ridge	St. Croix	2006	4.35	3.0	20.2	6.0
3	Tassel Ridge	Frontenac	2006	1.56	7.8	12.7	9.2
4	Summerset	Vincent	2006	2.63	10.0	881.4	5.2
5	Summerset	Frontenac	2006	2.22	1.3	202.7	5.8
6	Tabor Home	Marechal Foch	2006	0.66	1.7	64.8	6.3





Growing organically with help from the Leopold Center



The Leopold Center has supported organic research, extension and education at Iowa State University for more than a decade. Kathleen Delate of the ISU Agronomy and Horticulture departments and Cynthia Cambardella of the USDA-ARS National Soil Tilth Laboratory in Ames are the architects of the continually expanding program.

Projects in organic agriculture research, extension and education represent a small portion of the overall Leopold Center budget, but the returns have been significant. With 500 organic farmers in Iowa and countless others interested in transitioning to organic production and asking ISU to address their research needs, Leopold Center support is crucial. Recognition of the Neely-Kinyon Long-term Agro-ecological Research (LTAR) work and ISU Organic Ag Program and the related news coverage is a direct result of Leopold Center support. The program also has leveraged funds with grants from USDA-SARE, the Rodale Institute, and industry to support six ISU students in 2007-2008. Project leader Kathleen Delate comments, "It is not an exaggeration to say that the \$50,000 support from the LCSA led to more research, extension and education activities in the College than any other program."

Projects supported by the Leopold Center in 2007-08:

- **At ISU's Neely-Kinyon Farm, Greenfield**
 - > Comparison of organic and conventional crops, Long-Term Agro-ecological Research (LTAR)
 - > No-till organic corn, soybean and tomato
 - > Organic corn hybrid mixing study (with Ohio State University)
 - > Organic flax production
 - > Disease management of organic grapes
 - > Management of soybean staining disease and soybean aphid in organic soybeans
 - > Insect pest management in organic sweet corn
 - > Organic soybean variety trial
 - > Organic soybean rust management
- **At ISU's Southeast Research Farm, Crawfordsville**
 - > Organic soybean variety trial
- **At Cleve Pulley farm, Earlham**
 - > Organic no-till tomatoes (with College of Agriculture and Life Sciences/Practical Farmers of Iowa support)
- **Outreach and Extension activities by the ISU Organic Ag Program**
 - > Shared research results with 1,488 people at 24 research and extension presentations in Iowa and other states/countries



- > Presented research results at two field days at research station and on-farm sites, addressing organic grain, hay, and vegetable crops, to a total audience of 220 people
- > Responded to 25 calls from media related to questions about organic agriculture research
- > Extended research results to producers, agricultural professionals and consumers through publication of 10 research reports
- > Organized and staged the seventh Iowa Organic Conference for 310 participants, focusing on organic production, policy, and marketing
- > Developed in 2007 and offered in spring 2008, "Organic Agriculture: Theory and Practice," a three-credit, 16-session undergraduate and graduate course (32 students) with Center director Jerry DeWitt, and later offered the course on-line for 20 producers and extension staff in Iowa and throughout the country

Long-Term Agro-ecological Research (LTAR) site

The 2007 season was the tenth LTAR cropping season. The strong competitiveness of the organic crops in the LTAR (with yields equal or greater than conventional counterparts) could not have occurred without the excellent management skills of farm manager, Bob Burcham, the Neely-Kinyon Farm staff and the Organic Ag program staff.

Overall performance in the organic experiments in 2007 was excellent. There were significantly greater organic corn yields in the LTAR site at 209 bushels/acre in the corn-soybean-oat/alfalfa-alfalfa (C-S-O/A-A) rotation, compared to 188 bushels per acre in the conventional corn yields in the corn-soybean (C-S) rotation. Organic soybean yields averaged 60 bushels/acre, with no difference between organic and conventional rotations. Weed populations were low in all corn plots throughout the season, and no significant differences were observed between rotations for grasses and broadleaves on the first and second sampling dates.

There were no significant yield differences between oat rotations, averaging 106 bushels/acre of grain and 0.96 tons/acre of oat straw. Wheat yielded 47 bushels/acre and 0.84 tons/acre straw. Alfalfa yielded 3.32 tons/acre.

Organic No-Till Production of Corn, Soybean and Tomato

Significant strides were made in the Organic No-Till project, particularly with organic soybean yields of 45 bushels per acre, without any cultivation for weed management.

The Rodale Institute began experimenting with an Organic No-Till Plus system in 2004, where commercial crops (corn, soybean, pumpkin) were no-till drilled or planted into cover crops that were rolled with a roller/crimper. The Rodale Institute supplied ISU with a roller in order to begin collaborative research with the Organic Ag program in 2005. There were three treatments examined in 2007: a control (no cover crop/tillage used after planting); a cover crop combination of winter wheat (56 lb/acre) and Austrian winter pea (19 lb/acre), and a cover crop combination of rye (50 lb/acre) and hairy vetch (25 lb/acre).

The cover crops were rolled with a roller/crimper mounted on the front of the tractor in May 2007. Soybean yields in the rolled cover-cropped treatments were successful in 2007, averaging 45 bushels/acre. Yields were as low as 10 bushels/acre in the no-till plots compared to 124 bushels/acre in the tilled treatment. Both cover crop treatments provided some weed suppression, with the hairy vetch/rye treatment providing greater management of broadleaf weeds, equal to the tilled treatment.

Organic tomato performance was excellent because of irrigation. Twelve eight-inch 'Roma' tomato seedlings were planted in four replications of each treatment on June 4. Tomatoes in both cover crop treatments grew well. Both cover crop treatments provided some weed suppression, with a trend towards lower broadleaf weeds in the cover crop treatments compared to the control, particularly in the hairy vetch/rye treatment. But because of high weed variability, broadleaf weed differences among treatments did not differ. Yields ranged from 547,114 fruit/acre in the winter pea/wheat treatment to 645,269 fruit/acre in the tilled treatment. Tomato quality was high in all treatments, with an average of 87 percent in the highest grade. The greatest number of No. 1 tomatoes was found in the hairy vetch/rye treatment, with equal numbers in pea/wheat and the tilled treatments.

Rivers are roads
which move, and
which carry us
whither we
desire to go.

Blaise Pascal





Ecology Initiative

“In addition to supporting the Leopold Center’s mission to develop sustainable agricultural practices that are both profitable and conserving of natural resources, the Ecology Initiative engages in research, education and demonstration to address challenges that impede adoption of multifunctional agriculture planning and practices. The importance of this work in providing solutions for the year’s serious flooding and erosion events cannot be understated. Pairing with other groups on longer-term, multi-objective projects allows us to make significant progress toward demonstrating ecologically and economically viable landscape systems that are productive for both people and the environment.”

– Jeri Neal, Ecology Initiative program leader

Grassland Agriculture program

Now in its fourth year, the program goals are to identify and address the barriers to the development of grass-based production systems in Iowa agriculture. It complements the multi-partner Green Lands, Blue Waters effort, which advocates maintaining continuous living cover on the land. John Sellers, Jr., a Corydon farmer, handles the program’s “in-reach” and “out-reach” activities. Sellers will help to coordinate future grass-based program activities with the new Grass-Based Livestock Working Group. Some of Sellers’ grassland agriculture activities and events:

- Consultation and event planning with government agencies and NGOs for Field Grazing Meeting for Conservation Professionals, ISU Cow-Calf conference, and state forage management meetings

- State agency representation
- Work with Natural Resources Conservation Service (NRCS) on Ecological Site Descriptions, grazing economics and compatible use projects
- Iowa Forage and Grassland Conference planning and presentations, Grazing Lands Conservation Initiative
- Practical Farmers of Iowa annual conference planning, cluster meetings, field day host, presenter
- Mentoring farmers (200 hours)
- Participation in multiple area initiatives: Rathbun Land and Water Alliance, Southern Iowa Forage and Livestock Committee
- Switchgrass and biomass presentations for two out-of-state groups
- Attendance at pasture walks, grazing events and field days

Yearbook of Grass

Work continues on the re-issue of *Grass: The Yearbook of Agriculture 1948*. Support from the Wallace Genetics Foundation, Inc., the Leopold Center, and USDA special funds has been supplemented by contributions from the Forage and Grassland Council and Intertape Polymer. The 2008 edition will include a CD version of the original text.

Green Lands, Blue Waters (GLBW)

This consortium of land grant universities and agricultural, environmental and rural development nonprofit organizations, seeks to

develop and demonstrate new ecologically sound and agriculturally profitable farming alternatives that also address the Midwest contribution to hypoxia. By working through existing institutions and agencies across several Midwest states, the consortium will identify and implement agricultural strategies based on the integration of perennial plants and other continuous living cover into the rural landscape.

The Ecology Initiative supports GLBW through a “special agriculture appropriation,” consisting of federal funding for water quality-related work, obtained with the assistance of Senator Tom Harkin (D-IA) and members of his staff on the Senate Agriculture Committee.

Fourth year work includes:

- GLBW regional consortium coordination,
- GLBW Iowa organizing for cover crops and grazing,
- Publication covering winter grazing systems,
- Boone River sub-watershed monitoring and implementation,
- Mississippi River Basin land use database outreach (Louisiana State University),
- nitrogen tracking in biomass ash conversion technologies (ISU),
- streambank grazing outreach materials (ISU),
- and third crop (triticale) disease assessment (ISU).

Midwest Cover Crops Council (MCCC)

The regional consortium focused on enterprise development for promising perennial and continuous living cover systems through the establishment, vision and drafting of strategic plans for five multi-state working groups (perennial grain breeding, agroforestry, cover crops, grazing, and biomass energy crops).

A primary Iowa focus has been development of a state cover crops team linked to the Midwest Cover Crops Council, a GLBW working group, (www.mccc.msu.edu). This effort is led by Tom Kaspar of the National Soil Tilth Laboratory, and the on-farm applications and outreach are coordinated by Sarah Carlson of Practical Farmers of Iowa. The group is developing a second farm outreach arm with the Iowa Learning Farm project.

Regional work also included several publications, efforts to obtain foundation funding, and just over \$1.2 million in affiliated projects. See more at the group's web site: www.greenlandsbluewater.org.

Boone River Partnership

This group unites local producers, Iowa Soybean Association, Nature Conservancy, the Center's Ecology Initiative, ISU's Center for Agricultural and Rural Development, NRCS,

local Soil and Water Conservation Districts, Iowa Department of Natural Resources and Prairie Rivers RC&D. The Ecology Initiative provided funds for equipment and supplies, technical assistance, and data collection and interpretation that will yield evaluative performance measures for on-the-ground changes in selected (paired) Boone micro-watersheds. These funds were leveraged to help secure a two-year, \$800,000 Conservation Innovation Grant (CIG), "A Cooperative Conservation Framework for Improving Watershed Health" to conduct area-wide planning integrated with water monitoring in four central Iowa watersheds—two in the Boone River and two in the Raccoon River.

Twenty producers in each watershed are working on Certified Environmental Management Systems for Agriculture plans that will include energy efficiency, carbon, and greenhouse gas emissions assessment and planning, along with nutrients, soil, and pest management. CIG partners include: Agriculture's Clean Water Alliance (17 leading agricultural retailers investing in improving agricultural environmental performance in western and northern Iowa), Des Moines Water Works, Prairie Rivers RC&D, Pioneer Hi-bred (a DuPont Company), and Iowa Department of Agriculture and Land Stewardship.

Neal Smith National Wildlife Refuge

In this watershed-scale replication experiment at the Neal Smith National Wildlife Refuge in Jasper County, 14 scientists from five different institutions and seven academic departments are working with 14 small watersheds ranging from two to eight acres in size. There are five different treatments of varying amounts and placements of native prairie plantings. The project is guided by a Stakeholder Advisory Committee comprised of representatives from 15 different institutions and organizations. A local farmer is actively involved in implementing and managing all aspects of the experimental treatments.

Cumulative activities:

- Generated more than \$800,000 for project development, implementation, and data collection.
- Collected data for the first full cropping season on surface runoff, soil moisture, groundwater, and nutrient and sediment loss.
- Involved eight graduate students, nearly 10 undergraduate student research assistants, two undergraduate honors students, six international scholars and interns, and one high school student.
- Five research papers published or in press, one manuscript in review, five oral and poster presentations for scientists, practitioners, and policy makers.

Sustainability work at Iowa State University

Neal, a four-year member of the ISU Council on Sustainability, coauthored a business plan request for establishment of the President's Office of Sustainability. She serves on the ISU President's Advisory Council on Energy Conservation and Global Climate Change, where she helped devise the framework for a new university-wide, no-interest \$3 million revolving loan fund to be used for energy conservation investments. She has been active on the 2008 search committee for ISU's first Director of Sustainability Programs and is writing the first draft of an ISU sustainability policy document.





Special projects funded by the Ecology Initiative

I-FARM advisory panel meetings: Facilitating Advancement and Adoption of the I-FARM Model,

R. Anex, ISU agricultural and biosystems engineering

I-Farm is a web-based tool developed at Iowa State University that allows a farmer to run “what if” on-line scenarios on virtual or actual farms. The three-year-old tool has been expanded to determine biomass harvest and its impact on erosion, soil fertility, livestock operations, the farm’s energy and labor requirements and many other variables. It integrates crop and livestock components with soils, weather and economic information specific to 20 states, including Iowa. Access is free and the web site allows up to 50 users at one time. (See i-farmtools.org/)

Some of the project work is being conducted in conjunction with the Department of Energy’s Integrated Feedstock Supply Systems for Corn Stover Biomass (i-farmtools.org/)

[USDA-feedstock/](#)). As new information is added to the model, the team’s role is to evaluate the approach and algorithms, coordinate with other models and decision tools, identify important applications and recommend future development opportunities.

Distiller dried grains (DDGs) feeding and impacts on meat quality, M. Honeyman, ISU Research Farms

Good daily gains, reasonable feed costs, and 60 percent choice grade were achieved by continuous and rotational grazing supplemented with self-fed by-products pellets of DDGs, soy hulls and wheat midds (wheat midds are co-products of milling hard wheat for flour or durum for pasta manufacturing). The Conjugated Linolenic Acid (CLA) part of the fatty acid composition, a component that interests many consumers, was high, at .65 percent.

Improving water quality by increasing nutrient cycling in grassed waterways, Lee Burras, ISU agronomy, and H. Wilson, Ph.D. student, ISU environmental science, and farmer (Hancock County, Illinois)

This research and demonstration project on the functionality of on-farm, in-field waterways aims to determine how different grass species and biomass

removal affect nitrogen (N) and phosphorus (P) export from grassed waterways. Twenty-four small grassed on-farm waterways were created and planted with two native warm-season grasses (big bluestem and switchgrass), a cool-season grass traditionally used in waterways (smooth brome grass) and corn in plots with three replications. “Runoff” is applied to the head and sides of each grassed waterway, collected at the bottom of each waterway, and weighed and analyzed for sediment, N and P concentration. The differences between the N and P levels show how various treatments act as N and P sinks in grassed waterways. Preliminary results suggest that the warm season grasses reduce N and P export more than corn and smooth brome grass, and removing aboveground biomass increases N and P export.

Reduced stormwater runoff via increased use of rain garden, John Paulin, Prairie Rivers RC&D

This two-year demonstration project includes establishment of demonstration biocells, or rain gardens (urban filter strips) at four Ames sites: City Hall, Water Treatment Plant, Ada Hayden Heritage Park and the Public Library, and offers a modest grant and education program and technical support for interested landowners. Education focuses on how well-designed bio-retention systems can increase landscape attractiveness while providing groundwater recharge and reducing the stormwater runoff impact to local waters. Eight applicants received grants, and 25 on-site consultations and six classes were conducted.

Agroforestry and Silviculture Planning Grant, R. Hall, ISU natural resource ecology and management

In an effort to add to the Center’s agroforestry portfolio, a planning grant was provided to develop a more comprehensive approach to the topic. Prior commitments of ISU faculty time slowed developments and interested partners from surrounding states have been contacted about participation in future work. Current partners include: USDA Forest Service/NRCS National Agroforestry Center; University of Minnesota’s Center for Integrated Natural Resource and Agricultural Management; USDA-ARS National Soil Tilth Laboratory; University of Wisconsin’s Center for Integrated Agricultural Systems; Green Lands, Blue Waters; and Iowa State University Natural Resource Ecology and Management.

Impacts to the land-water-human system of rural Iowa from high-intensity continuous maize production, T. Papanicolaou, University of Iowa, and L. Burras, ISU agronomy

This joint Ecology/Policy Initiative project uses data from the Clear Creek watershed near Iowa City as a model to forecast how high-intensity continuous maize production might impact land use and water quality budgets in Iowa. The objective is to develop sound management practices responsive to the short- and long-term predictions on water and soil quality changes stemming from continuous corn production.





Marketing and Food Systems Initiative

It was another highly productive year for the Marketing and Food Systems Initiative (MFSI), directed by Rich Pirog with program assistance from Beth Larabee, Malcolm Robertson, and graduate assistants Andy Larson and Becky Rasmussen. Under the initiative banner, new Internet-based tools were released, publications were issued on timely topics, and valuable opportunities for interaction and cooperation were offered to stakeholders.

Among the significant activities of the initiative:

- Released new Internet tool showing produce shipment information: “Where do your fruits and vegetables come from?” on the Leopold Center web site (www.leopold.iastate.edu/resources/fruitveg/fruitveg.php).
- Marketing and Food Systems Initiative *Food Facts* research results document completed and published on the Leopold Center web site (www.leopold.iastate.edu/research/marketing_files/food/food.htm).
- A project underway with Dalhousie University in Nova Scotia and ISU graduate student Becky Rasmussen will produce Life Cycle Analysis (LCA) on different beef production systems using Iowa data.
- Received \$30,000 from the Wallace Center for Sustainable Agriculture to coordinate planning for 11 Midwest organizations to collaborate in helping growers who want to sell to larger volume buyers and markets (Chicago, Minneapolis, etc.)
- Continued work of the Value Chain Partnerships project.





RFSWG provides seed funds for groups in six Iowa geographic regions.



Regional Food Systems Working Group, Fall 2008

Pirog was active on several fronts related to marketing and food systems work in the United States. In 2007-2008, he:

- Participated in the first international symposium on energy use and greenhouse gas emissions in food supply chains held in Davis, California,
- Co-authored a chapter on sustainable food distribution for the book *Sustainable Food Supply Chains*,
- Co-authored a chapter on value chains for volume on Agriculture of the Middle published in May 2008,
- Represented the Leopold Center on Iowa's new Farm to School Council,
- Agreed to serve on the advisory council for the National Farm to School network,
- Began serving on the National Wallace Center Good Food Network Advisory Council, and
- Became a board member for the new Iowa Foundation for Microenterprise and Community Vitality.

Value Chain Partnerships (VCP) Phase III

Now in its fourth year of operations, the project added two new working groups: small meat processing and fruit and vegetable capacity building in September 2007.

As the project continued to evolve, the name was shortened to Value Chain Partnerships (VCP) and a new logo was developed. VCP leaders completed in-depth evaluations of the Pork Niche Market Working Group and Regional Food Systems Working Group, their activities, and challenges that remain.

Group leaders continued to seek additional funds and received \$22,000 for extra technical assistance from the Wallace Center. A pre-proposal was submitted to North Central Sustainable Agriculture Research and Education (SARE) Professional Development Program for \$65,000 to provide training about communities of practice. The group submitted a full proposal and will receive the grant funding.

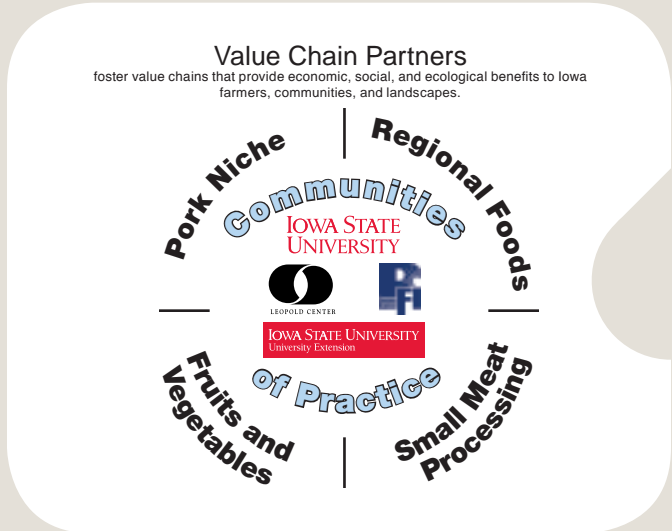
Nick McCann, a graduate of the University of Notre Dame, was selected as the new MBA student with a minor in sustainable agriculture who will work with the Small Meat Processing and Regional Food Systems Working Groups.

Pork Niche Market Working Group (PNMWG)

- Work continued on the two-year \$400,000 National Research Institute-U.S. Department of Agriculture grant on "Niche Market Herd Health and Cost Management Project."
- The "Managing for Herd Health" manual was completed and distributed.
- Copies of the niche pork newsletter were provided to interested parties.

Regional Food Systems Working Group (RFSWG)

- Evaluators selected Northwest Iowa (Woodbury County as base) as a new area group to join Southeast, Northeast, and Southwest Iowa in RFSWG activities.
- Group leaders hired Mary Swalla Holmes to research case studies of farmer-led local food networks that have developed strong brand loyalty among consumers.
- The group received \$9,000 from the Alces Foundation to conduct capacity building of local groups.



Somewhere between 70 and 75 percent of the earth's surface is covered with water.

Fruit and Vegetable Working Group

- Group members conducted a survey of more than 25 Iowa fruit and vegetable growers to identify their challenges that could be addressed by research and technical assistance when working together.
- At the group's first meeting on November 20, 2007, more than 25 producers, ISU faculty and staff, state agency and business representatives discussed the barriers to increasing the capacity of Iowa's produce growers.
- A second meeting occurred in March 2008 and two summer field days were held.

Small Meat Processors Working Group

- Group members completed a resource guidebook for Iowa's small meat processors. The document is available at www.valuechains.org/smpwg/
- Organizers scheduled additional product-costing training sessions for Iowa's small meat processors.
- Arion Thiboumery, an ISU graduate student engaged in work for the group, spent part of the summer helping to plan and build a new small meat processing facility in Spillville.

Marketing outreach

Seminars and workshops

The Marketing Initiative sponsored or co-sponsored several events that highlighted important local food issues. These included the Tri-state Local Foods Conference in Quincy, Illinois; Iowa Network for Community Agriculture conference in Cedar Rapids; a speech by Sonja Brodt on "Low Carbon Diet: Using Life Cycle Analysis in Food Supply Chains;" a food safety workshop for producers in Cedar Falls; and the annual MFSI Workshop in Ames, with 190 people registered.

Presentations

Pirog made 14 presentations in Iowa related to the Leopold Center's efforts to assist local food systems. He also was invited to speak on several occasions outside of Iowa. Among them:

- 2007 — National Life Cycle Assessment Conference, Portland, Oregon; Carolina Farm Stewardship Association Annual Conference, Durham, North Carolina
- 2008 — Midwest Regional "Good Food" Network, Chicago, Illinois; Stone Barns Center, Pocantico Hills, New York; Kellogg Food and Society Conference, Phoenix, Arizona; and Sustainable Ag and Food System Funders Conference, Portland, Oregon.



Media

With fuel costs soaring, local foods started looking considerably more attractive for a variety of reasons, both environmental and financial. The food miles concept, pioneered by Pirog in a report (www.leopold.iastate.edu/pubs/staff/ppp/contents.htm) a few years ago, continued to pique the interest of commentators and consumers.

Local food was a topic he discussed with a wide range of media outlets: *Iowa Farmer Today*, National Post of Canada, *Body and Soul*, CNN American Morning, *Real Simple*, National Public Radio, *New York Times*, Center for Science and Medical Journalism, *Daily Iowan*, *Geotimes* magazine, *Quad-City Times*, *Allegheny Front*, *Table* magazine, *Farm Journal*, MSN Money, *Farm Bureau Spokesman*, MSNBC, *Women's Health*, *Consumer Reports*, *Des Moines Register*, *Governing* magazine, *Nation's Restaurant News*, *Supermarket News*, Fox News Radio, *Global Mail* (Canadian newspaper), Fish News Radio (Ketchikan,

AK), Reuters News Service, Public Radio Canada, *Grower* magazine, French Canadian Broadcast Company, and *Region Focus* magazine. In addition, Pirog wrote an article on local foods for a World Book encyclopedia supplemental volume, *World Book - Science Year*.

Food miles were the subject of interviews Pirog conducted with *Iowa Farmer Today*, *Boston Globe*, CNN American Morning, *Alaska Airlines* magazine, Forecast Earth (Weather Channel), *Martha Stewart Living* magazine, *Granville* magazine (Vancouver, BC), *Sustainable Food News*, *Working Mother* magazine, and Reuters News Service.

Other topics that led to media requests for interviews with Pirog included the 2008 Iowa floods, Value Chain Partnerships, the Food Facts document, sustainability, carbon footprints and food, food safety, and agritourism.

Policy Initiative

takes shape for the future



The goals, activities and future directions for the Policy Initiative began to coalesce in FY2008. Initiative leader Jerry DeWitt, assisted by coordinator Mary Adams, conducted listening sessions with five policy experts who have ties to the Leopold Center and/or policy-making in Iowa. Among them were Neil Hamilton of the Drake University Agricultural Law School; Mike Duffy, Mark Edelman, and Cathy Kling of the ISU agricultural economics department; and Roger McEowen (with Erin Herbold) of the ISU Center for Agricultural Law and Taxation. Each of the conversations resulted in a number of suggestions for work the Policy Initiative might profitably conduct.



Focus on Iowa

DeWitt concluded that because the Center's primary responsibility is to the citizens of Iowa and the issues that confront Iowa's agricultural environment, the main thrust of initiative work should be local or regional, and should support the efforts of the other two Center initiatives. The Policy Initiative does not have a full-time staff person. It lacks the resources to conduct broad-based national policy work, but there are numerous other agricultural policy centers that already are focused heavily on Farm Bill questions or trade issues. The decision to pursue Iowa-based projects was supported by responses from the advisory board to questions about the structure of the Policy Initiative that were raised in a 2006 study by agricultural law attorney Doug O'Brien.

The Policy Initiative aims to reach somewhat different groups than the Center's ecology and marketing initiatives. Prospective target audiences for policy outreach and products include:

- State/federal agencies
- Conservation and natural resources partners
- ISU Extension
- County boards of supervisors





The United States uses about 346,000 million gallons of fresh water every day.

- Iowa General Assembly
- Iowa legal community
- Cities/municipalities

Two programming paths

The Policy Initiative will channel its early efforts in two areas.

Water and soil includes:

- Iowa Landowner and Sustainable Ag Land Stewardship project, a two-year project under discussion with Drake Agricultural Law School and other partners.
- Land ownership and sustainability research project, Mike Duffy, ISU Extension economist, will conduct research with partial support from the Policy Initiative while on a faculty improvement leave.
- Hypoxia in the Gulf of Mexico: Implications for Iowa, a late 2008 conference sponsored by the Policy and Ecology Initiatives and coordinated by Cathy Kling of ISU's Center for Agricultural and Rural Development. (Kling was one of the authors of a recent EPA report on hypoxia's effects downstream and the seminar deals with Iowa's responses to the problem.)
- Special project with Ecology Initiative: *Impacts to the land-water-human system of rural Iowa from high-intensity continuous maize production.*

This is a two-year University of Iowa and ISU collaboration using Clear Creek watershed near Iowa City as a model to forecast how high-intensity continuous maize production might impact land use and water quality budgets in Iowa.

Rural infrastructure and resurgence

- Home Place America. In February, the Policy Initiative organized a meeting of ten rural affairs experts from around the country to consider what sort of rural policies would be most beneficial for all of rural America, not just the agricultural sector. The participants came from academia, non-governmental agencies, conservation groups, and rural affairs organizations. Their conversations and impressions were compiled in a white paper. The paper will be shared with policy makers engaged in thinking and acting on rural issues.

Other Activities

- After discussion on economic educational items that are needed for beginning farmers, Mike Duffy will be working with students to develop budgets for various alternative agricultural enterprises (crops and livestock outside the conventional corn/beans regimen). These will be simple two- to four-page handouts suitable for use in ISU Extension offices



and will explain alternative enterprises using a whole farm context. Beginning farmers must consider the risk, marketing, labor (quantity, timeliness, and skill), capital needed, time to pay off, traditional costs and returns, and a myriad of other aspects before starting a new enterprise.

Two collaborative efforts with the Marketing and Food Systems Initiative deal primarily with food policy issues.

- The Leopold Center is contributing start-up dollars to help the Iowa Department of Public Health revive the Iowa Food Policy Council, which operated successfully

in the last decade. The new council is likely to focus on food and health issues, as well as local food matters.

- The University of Vermont (Burlington) is establishing a Food Policy Research Center as part of an effort to create more interdisciplinary research opportunities. The organizers approached the Center to determine if there were places where the two centers could share research findings (to avoid duplication) and perhaps leverage research funds.

Initiatives Fund

competitive grants projects for FY 08

Each Leopold Center research initiative funds research, education, and demonstration projects to support its unique objectives. In addition to Ecology, Marketing and Food Systems, and Policy related work, research to support new dairy and grass-fed livestock operations in Iowa received attention.



Grass-based livestock working group

A special call within the Summer 2007 Request for Pre-proposals seeking ideas on how this grass-based work might be handled led to creating a Grass-based Livestock Working Group. The proposals that were eventually generated from the special call resulted in an amalgam of several organizational schemes. Plans for formally launching the group were well underway as the fiscal year ended in June 2008.

Rich Pirog acted as a liaison with ISU Agriculture and Natural Resources Extension as they formulated the duties for their new small farms position to include some work with the Center's grass-based livestock team which works across all three initiatives. Andy Larson, who received an MBA with a sustainable agriculture minor from ISU in May 2008, was hired as the ISU Extension Small Farm Sustainability specialist, and has a 25 percent appointment to lead the Leopold Center's Grass-based Livestock Working Group.

The United States uses nearly 80 percent of its water for irrigation and thermoelectric power.

Ecology Initiative

The Ecological Systems Research Initiative funded 6 of 24 pre-proposals received from the Summer 2007 RFP. Another 13 projects received renewals for a second or third year of funding.

Ecology Initiative existing grants – Renewals for second, third and fifth years of funding

Total amount awarded.....	\$216,625
Total number of projects.....	9

New Ecology grants FY2008

Total amount awarded.....	\$125,426
Total number of projects.....	5

Agronomic, ecological and economic comparisons of conventional and low-external-input cropping systems, 3 years

M. Liebman, ISU agronomy; C. Chase, ISU Extension, Tripoli; and M. Wander, University of Illinois, Urbana-Champaign
Building on earlier work, this project aims to (1) measure crop yields, weed growth and weed seed densities in conventional and low-external-input (LEI) cropping systems; (2) assess labor requirements, energy consumption, input costs and net returns for conventional and LEI systems; (3) determine the impacts of soil microbes on the survival of weed seeds in conventional and LEI systems; (4) determine the impacts of conventional and LEI systems on soil organic matter and fertility; and (5) distribute results and insights through an outreach program.

new Agronomic, environmental and economic performance of alternative biomass cropping systems, 3 years

L. Schulte, ISU natural resource ecology and management; K. Moore, ISU agronomy; R. Hall, ISU natural resource ecology and management; A. Hallam, ISU economics; and M. Helmers, ISU agricultural and biosystems engineering

The project investigators are seeking biomass cropping systems that are productive, profitable, and mitigate the negative effects of annual crops on soil and water quality. Investigators are developing and testing several alternative systems that include sweet sorghum/triticale for superior biomass

yields; a corn-soybean-triticale/soybean and corn-switchgrass rotation to reduce environmental impacts; and combining triticale with aspen and cottonwood plantings to achieve short-term biomass yields and superior long-term yields. All systems will be compared to conventional continuous corn for 1) energy/fertilizer inputs versus biomass outputs, 2) impacts on soil and water quality, and 3) establishment, production, harvest and transport costs.

Assessing soil quality impacts after conversion of marginal cropland to productive conservation, 2 years

T. Sauer, C. Cambardella and D. James, USDA-ARS National Soil Tilth Laboratory; and H. Asbjornsen, ISU natural resource ecology and management
This work with productive conservation is examining whether planting trees on low-productivity and/or eroded cropland, either in an agroforestry system or as afforestation, has a significant benefit for soil organic matter content and associated ecosystem services.

Custom grazing in Iowa, 1 year, extended

T. Opheim, Practical Farmers of Iowa, Ames
This project is evaluating existing grazing arrangements used in Iowa, will recommend how they could be improved, and create educational materials based on the findings. Fifty producers were interviewed. Researchers are analyzing data from an ongoing grazing and pasture rent



survey done by the Natural Resource Conservation Service. Results will be shared at a series of workshops and field days, along with information on successful models for custom grazing contracts in Iowa. An Iowa Custom Graziers Directory is being prepared.

Development and implementation of low input delivery systems for ethanol co-products in forage-based beef systems, 3 years

D. Loy, ISU animal science, and J. Sellers, ISU Extension, Chariton

This three-part study will develop, test, and demonstrate low-cost and convenient delivery methods and supplementation programs using distillers feeds in forage-based beef production. This offers a management tool for graziers when forage resources are limited, and an outlet for the increasing amounts of co-products generated by the ethanol industry.

new Energy use and nutrient cycling in pig production systems, 2 years

M. Honeyman, ISU Agricultural Research Farms, and P. Lammers, ISU animal science and sustainable agriculture graduate student

This project will quantify energy use in Iowa's pig production systems by using process analysis. All direct and indirect energy inputs in the construction and operation of a pig facility and in the cultivation and processing of feed ingredients will be considered. The results will provide an understanding of energy use and flows of an entire pig production system, for both conventional and alternative options.



Forage double-cropping demonstration, 3 years, extended

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) were 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 will require fewer management inputs while exhibiting high-quality performance.

Grazing compatibility in and for future years, 5 years

E. Johnston, Southern Iowa Forage and Livestock Committee, and J. Klein, Natural Resources Conservation Service, Corning Research and demonstrations are being conducted on wildlife compatibility with grazing and grassland pasture conversion from cool-to warm-season grasses. In-field education is ongoing with high school and college agriculture students to inform them about rotational grazing management and conservation.

new Grazing prairie: Improving species diversity while maintaining cattle and goat productivity and resting home pastures, 3 years

D. Ryan and L. Appelgate, Iowa Heartland Resource Conservation and Development, Ankeny; L. Lown, Natural Resources Specialist, Polk County

The investigators seek to increase species diversity at Chichaqua Bottoms Wildlife Area in Polk County by grazing cattle on a 263-acre reconstructed prairie and browsing goats in three oak savanna areas degraded by invasive species. Calf-weaning weights, body condition scores, and the economic value of winter forage harvested or stockpiled on resting home pastures also will be measured.

The impact of biodiversity services in row crop production in annual versus perennial landscapes, 2 years

M. O'Neal, ISU entomology, and L. Schulte, ISU natural resource ecology and management

Investigators are comparing levels of insect biodiversity and insect pest suppression between integrated perennial-annual landscapes and landscapes dominated by corn-soybean production agriculture. This will offer a scientific foundation for enhancing biodiversity within landscapes dominated by annual row crops.

Integrated soil and weed management production systems for perennial food crops, 2 years

G. Nonnecke and C. Dilley, ISU horticulture, and T. Loynachan, ISU agronomy

The goal is to provide strawberry and grape growers with sustainable weed management options and improved tools which they can use to monitor and assess the quality of their soil. Two conventional and two alternative weed management systems will be tested for their effects on selected physical, chemical, and biological soil properties.

Iowa recreational property ownership: Identification, contact and social dynamics of multiple use perennial landcover, 1 year

M. Wagner, ISU landscape architecture, and J. LaGro, University of Wisconsin-Madison, urban and regional planning Several barriers exist to the productive use of beef and dairy grazing on non-resident rural property in Iowa: lack of understanding about the extent and characteristics of non-resident owned land and identification of landowners and little understanding about their willingness to integrate contract grazing and other agricultural practices into their land use planning. The principal investigators are using GIS-based analysis to identify

non-resident rural property owners in Fayette, Appanoose, and Clarke counties, and conducting telephone interviews with a sub-sample of non-resident landowners.

The landowners' decision: Grazing and fire as management tools on Iowa grasslands and oak savannas, 2 years

L. Wright Morton, ISU Sociology

The project seeks to learn more about landowner attitudes, perceptions, and knowledge of fire as a management tool for controlling invasive species and enhancing conditions for native plants and animals on recreational and productive agricultural lands. There will be two surveys done, one in a watershed with existing prairie remnants and much potential for ecological restoration, yet under threat by invasive species; and a second will target the Middle Raccoon River corridor and oak savanna restoration.

New strategies to enhance sustainability of Iowa apple orchards, 3 years

M. Gleason, ISU plant pathology, and M. Liebman, ISU agronomy

This project aims to integrate the most sustainable pest management practices into an "environmentally best management practices" strategy that is more cost-effective and environmentally friendly than either traditional, spray-by-calendar management or conventional IPM methods. It also will explore the feasibility of incorporating hard cider production into the value-added product line of Iowa apple growers.

Optimizing legume establishment in winter small grains, 3 years

J. Singer, USDA-ARS National Soil Tilth Laboratory, Ames

With some refinement of management techniques, winter cereal grains and frost-seeded forage legumes could play significant roles as important third and fourth crops in the corn-soybean rotation. Establishing legumes under cereal grains requires attention to canopy structure, plant height, and leaf orientation, all of which affect the amount of light that will be transmitted to the legume seedling. Investigators used frost seeding to determine which winter small grain plants traits enhanced forage legume establishment, and are developing a predictive modeling tool for selecting high-yielding cereal grain varieties suitable as companion crops for forage legume establishment.

Participatory ecology for 'Agriculture of the Middle': Developing tools and partnerships to bridge gaps among science, people and policy in landscape change, 3 years

L. Schulte and R. Atwell, ISU natural resource ecology and management, and L. Westphal, USDA Forest Service, North Central Research Station

Using community- and watershed-based strategies in two central Iowa watershed communities (Stanhope and Prairie City), the researchers conducted interviews to build rapport in preparation for a series of participatory design workshops. Partner organizations will help access key individuals within the watershed communities who are capable of initiating change.

new Providing shaded pasture with perennial biomass energy plantings, 3 years

R. Hall, ISU natural resource ecology and management; J. Randall, ISU Extension forester for southern Iowa, and R. Abbott, landowner and cow-calf operation manager, Diagonal "On-farm" evaluation continues for agroforestry techniques to improve pastures with tree shade and additional forage while producing woody biomass. Investigators will

evaluate the mid-rotation growth phase of a silvopastoral system that combines one cycle of woody biomass harvest and alley-cropped hay production, which is then converted to shaded pasture. They also will look at the continued success of initial tilling, a weed mat cover, and mowing for hay in reducing competition between planted poplars and red clover/orchard grass pasture.

Quantifying the role of perennial vegetation in removing nitrate from groundwater in riparian buffers, 1 year, extended

W. Simpkins, ISU geological and atmospheric sciences; R. Schultz and T. Isenhardt, ISU natural resource ecology and management; and T. Parkin, USDA-ARS National Soil Tilth Laboratory, Ames

This ecology project has narrowed its focus due to the loss of a PhD student, but will continue to collect data on the potential ecosystem services resulting from the conversion of row-cropped lands to perennial vegetation for biofuel feedstock. Continuing analyses include soil aggregation, carbon dynamics (total and particulate organic matter), microbial biomass, and infiltration.

new Reducing pesticide use in Iowa vineyards: Alternatives to herbicides for vineyard weed management, 2 years

G. Nonnecke and P. Domoto, ISU horticulture; and T. Loynachan, ISU agronomy

Weed management treatments for Iowa vineyards will be evaluated using a holistic approach by measuring weed growth, grapevine growth and development, and soil characteristics. The project will look at two conventional (tillage and herbicide), and two alternative (straw mulch and living mulch), weed management systems and their influence on weed and grapevine growth and development, fruit quality, and selected physical, chemical and biological soil properties. It will also investigate the influence of using trickle irrigation within conventional and alternative weed management systems.

Screening winter triticale cultivars and breeding lines for forage and biomass production, 3 years

E. Heaton, ISU agronomy

The project objective is to quantify Iowa's forage and biomass production from commercially available winter triticale and rye cultivars, and screening breeding lines of winter triticale for forage and biomass production (double-cropping). Field experimentation and trait assessment trials at (Ames and Nashua) in 2007, 2008 and 2009 include 15 commercial triticale cultivars, 19 experimental triticale lines, five commercial rye cultivars, and two rye/triticale blends.

Soil moisture dynamics and plant transpiration under contrasting annual-perennial cover types, 2 years

M. Helmers and A. Kaleita, ISU agricultural and biosystems engineering; and H. Asbjornsen, ISU natural resource ecology and management

Investigators hope to gain a better understanding of how soil moisture and plant water use vary under differing annual-perennial plant communities. This information will help land use managers understand how placement of different vegetative cover types on the landscape can influence the hydrologic balance and potentially enhance the sustainability of agricultural production systems. Sixteen different treatments (three replications) are being studied including corn, soybeans, brome grass, switchgrass, winter cover crops in a corn soybean system, and four different native perennial species both in monoculture and polyculture plots (big bluestem, Canada wild rye, false blue indigo, and stiff goldenrod).

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

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

Staff conducted 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.

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

H. Asbjornsen, 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 is examining differences in nutrient, water, and carbon storage and output for selected mixtures of annual and perennial plant communities, and providing 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.



Marketing and Food Systems Initiative

The Marketing and Food Systems Initiative funded 13 of 28 pre-proposals received from the Summer 2007 RFP. Another five projects were renewed for a second year of funding.

Marketing Initiative existing grants – Renewals for second year of funding

Total amount awarded.....	\$92,671
Total number of projects.....	5

New Marketing Initiative grants – FY2008

Total amount awarded.....	\$235,379
Total number of projects.....	13

new Adding a new generation to Iowa's sustainable farms, 2 years

T. Opheim and C. Johnson, Practical Farmers of Iowa, Ames

This program aims to help at least 15 farm families or make farmer/apprentice matches that transition to the next generation by creating a learning community and holding special field days and breakout sessions at annual conferences and meetings. Case studies will be developed with at least six families or farmer/apprentice matches.

Building a direct-to-consumer food distribution system in Iowa, 2 years

G. Huber, Practical Farmers of Iowa, Ames

This planning effort laid the groundwork for a self-supporting, direct-to-consumer distribution system in Iowa. The Iowa Food Cooperative has formed as an alternative distribution system that incorporates farmer and consumer ownership and control. Overall goals of the project are to increase marketing and sales of at least 20 farmers by at least \$100,000, and involve at least 150 consumers.

Development of resources for organic food processors in the state of Iowa, 1 year, extended

S. Beattie, ISU food science and human nutrition

While there are many resources available for sustainable and organic agricultural producers, resources are

lacking for those who wish to process these materials according to certified organic and other processing-specific regulations. This project includes a web-based resource for food processors who are interested in processing organically grown foods into finished products and also will fund a workshop for organic food processors in Iowa and surrounding states. More information is available at www.organicfoodprocessing.org

new Establishing an Iowa Microenterprise Foundation, 2 years

M. Edelman, ISU Community Vitality Center, and R. Prescott, Iowa Microloan Program, Ames

The Iowa Foundation for Microenterprise and Community Vitality (IFMCV) is a statewide nonprofit group that can provide small loans and coordinate technical assistance for rural entrepreneurs. The IFMCV has received a loan from and is the statewide intermediary for the Small Business Association.

new Expanding business skills for specialty growers in Iowa, 2 years

S. Shafer, Mid-Iowa Small Business Development Center, and P. Huber, Grow Your Small Market Farm Business Planning Program, Ames

This grant is building on the successful Grow Your Small Market Farm™ program. Investigators plan to further develop a grower network among the more than 100 small specialty

farm businesses that have completed the program since 2001. Several participants in the program will receive scholarships based on the sustainable production practices they use.

new Grinnell Area Petroleum Replacement Initiative Phase 2, 1 year

R. Dana, Imagine Grinnell, Grinnell

The Grinnell Area Petroleum Replacement Initiative began in 2006 to educate area businesses and residents about alternatives to petroleum products and to promote their use. Phase II will include workshops at Iowa Valley Community College for farmers interested in on-farm biofuel processing. Investigators have a pilot biodiesel system demonstration shown on their web site, www.gotoplanb.net/gapri/

High tunnel production and distribution model for produce, 2 years

R. Hansen and C. Hardy, ISU Extension Value Added Agriculture Program

Investigators developed production and marketing resources, including fact sheets, which can be used by producers and producer groups to create business strategies related to high tunnel greenhouse technology. Models from this project will help determine optimal production scale based on true costs of production, processing and packaging associated with high tunnel systems.

Investigating the feasibility of establishing food processing and distribution centers for western Iowa, 2 years

P. Garrity, Floyd Boulevard Local Foods Market, Sioux City

What are the purchasing requirements of regional institutional and wholesale food companies in western Iowa? The researchers are determining current demand for and production of local foods in the region. With this information, they can examine how a centralized processing and distribution system could be designed to efficiently move products to consumers. Should such a system appear viable, they will conduct a detailed feasibility study for the project.



Iowa Grasslands Products Calculator, 1 year

D. Plazak and R. Boeckenstedt, ISU Center for Transportation Research and Education

Investigators developed a prototype mapping tool that compares county-level demand and supply for the production of fuel from perennial tall grass crops in Iowa. Resulting databases will show the potential capacity for grassland production in each county, potential demand based on fuel currently sold in each county and conversion rates for grass crops of primary interest to the Leopold Center. These databases will be linked to show potential markets for grassland production related to renewable fuels.

Is the meat goat enterprise profitable and sustainable? 2 years

D. DeWitt and T. Olsen, ISU Extension, Storm Lake; and D. Morrill, ISU Extension, animal science

Investigators developed a program to help meat goat producers track, analyze and evaluate expenses, income and profitability for their enterprises. The information will enable researchers and producers to identify losses in profitability and establish long-term sustainability within the industry. Preliminary findings appear at www.leopold.iastate.edu/research/marketing_files/workshop08/present/goat.pdf

new Latino farmers and local multicultural food and marketing systems, 2 years

J. Flora, North Central Regional Center for Rural Development and ISU rural sociology, Ames

The project will develop an immigrant farmer training and business incubation program alongside a multicultural local/regional food system. It will focus on the entrepreneurial spirit and diverse foods sought by new immigrants as a way to create entry points for Latino farmers in local food systems. Investigators will work in two Iowa communities and prepare a guide that documents crucial aspects of the process so that it could be used in other communities.

new Mapping biomass markets in Iowa, 1 year

Shashi Nambisan and R. Boeckstedt, ISU Center for Transportation Research and Education

A new marketing sizing calculator to provide supply and demand information for more than 200 products in 23,000 communities throughout the United States will be created. The refined version will show information in terms of truck loads per year, warehouse space required, or per capita servings or calories per day of various food products. A second phase of the project will refine the biomass calculator funded for initial development in the previous year.

new Measuring the economic impacts of local food initiatives at the regional level, 1 year

D. Swenson, ISU economics

Three regional groups (Southeast Iowa Food Network in Jefferson, Van Buren and Davis counties; an eight-county group surrounding Waterloo and Cedar Falls; and the SW Iowa Food and Farming Initiative

in southwest Iowa) will receive help to gauge potential economic impact of increased production and consumption of local food products. They also will determine the value of various production and distribution scenarios and potential economic impact in the region.

New champions expanded scope: Developing an action plan for building an expanded regional food economy in Black Hawk and surrounding counties, 3 years

Kamyar Enshayan, Center for Energy and Environmental Education, University of Northern Iowa, Cedar Falls

This grant focuses on building capacity for a stronger regional food economy in the eight-county region around Black Hawk County. The North Iowa Food and Farming Partnership formed in winter 2007-8 included members who are farmers, retailers, bankers and educators.

new New farmer jump-start project, 1 year

K. Booth, Wallace Foundation for Rural Research and Development, Lewis, and Steve Olsen, ISU Extension, Cass County

This pilot project will recruit and provide financial and technical assistance to one new food producer in Cass County. That producer will receive access to land, water and production equipment, and expertise that will enable him or her to grow one or two more profitable vegetable crops, which will be marketed to local retailers. In addition, selected low-income residents will receive coupons for meals and discounts on local foods at the farmer's market or grocery store. The project was delayed this year because of difficult weather.

Planning a facility for value-added farm business incubation and educational use, 1 year, extended

L. Barnes and T. Deimerly, Marshalltown Community College, Marshalltown

This project complements master planning for the new Midwest Center for Entrepreneurial Agriculture with a feasibility study for locating a community incubator kitchen on the property. Investigators will survey potential users, look at costs and equipment needs, and draft an

operating budget and business plan for the kitchen. Money has been received for the incubator kitchen.

new Pottawattamie County Farm to Fork, 2 years

S. Frederiksen and M. Houser, Golden Hills RC&D, Oakland

A mentor program and strategic plan is being developed to increase the production of locally raised food in southwest Iowa. Organizers hope to increase the number of beginning producers in the region, increase the number and diversification of local growers as well as farmer-led businesses, and build stronger relationships between consumers and producers in the region.

new Producer machinery and labor sharing arrangements workshops, 2 years

R. Ginder, ISU-Iowa Alliance for Cooperative Business Development and ISU economics, Ames

Three workshops were conducted in 2007 to explain the pros and cons of producer machinery and labor sharing arrangements to producers and agribusinesses. Building on these experiences, the investigators will prepare two new case studies on intergenerational transfer to supplement the case studies already done on producer resource sharing. Information from these case studies will help them develop additional workshops on machinery and labor sharing arrangements.

new Researching and evaluating an effective web-based local food sales template, Phase II, 1 year

L. Friest, Northeast Iowa RC&D Postville and D. Reisner, Agrestic Software, Urbandale

The Northeast Iowa RC&D has been working with the Leopold Center and three other Iowa RC&Ds on web-based sales/management software that can be used to automate order processing and billing. When completed, the new software will be tested and introduced by other RC&Ds in Iowa to help Iowa food producers and buyers conduct business over the Internet. Tool start-up has been delayed to 2009.



new Strategies to effectively promote and market on-farm retail enterprises, 1 year

R. Hansen, M. Laux, and C. Hartsook, ISU Extension Value Added Agriculture Program

This project targets the Iowa agritourism industry with marketing research and strategies to promote on-farm retail enterprises. Workshops and a survey of the more than 800 agritourism operators in Iowa are planned. Activities are directed by the Agritourism Working Group, led and facilitated by the ISU Extension Value Added Agriculture program.

Strategies to stabilize locally grown produce for year-round sales: A feasibility study, 2 years

S. Beattie, L. Wilson and A. Mendonca, ISU food science and human nutrition

First year work showed that: freezing products is the preferred method of stabilization for year round sales, pathogen reduction in the flow is effectively carried out by the blanching step of freezing operations, and surveys found that consumers are willing to pay for the frozen product. Later work has been focused on light processing of food to enhance food safety. Light processing techniques include cleaning and modified atmosphere packaging, light thermal treatment, and freezing.

new Strengthening the local and regional food system in the Iowa Valley, 1 year

C. Taliga, Iowa Valley Resource, Conservation & Development (RC&D), Amana

The strategic plan will be completed for I-Food, a regional local food system in the Iowa and Cedar River valleys in Benton, Iowa, Johnson, Linn, Poweshiek and Tama counties. The group will continue to support development of local food programs at Metro High School in Cedar Rapids and the Iowa City Community School District.



Policy Initiative

The Policy Research Initiative funded one of four pre-proposals received from the Summer 2007 RFP.

New Policy grants – FY2008

Total amount awarded..... \$20,000
Total number of projects..... 1

Beginning and midsize farm bill analysis and education initiative, 2 years, extended

M. Duffy, ISU Beginning Farmer Center and ISU economics; and T. Bruckner, Center for Rural Affairs, Lyons, Nebraska

Project investigators analyzed farm policies that impact sustainable, midsize farmers and ranchers (those just beginning as well as those who are beginning again by converting to niche markets and/or sustainable farming systems). The analysis included the current farm program and 1031 like-kind exchanges, beginning farmer initiatives focused on access to land and markets, value-added and conservation programs that support sustainable farming systems serving high value market products, and new policy options for the 2007 Farm Bill.

Defining farm types: Policy research considerations, 1 year, extended

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 State policy alternatives for biofuels industry support of sustainable production of biofuels feedstocks, 2 years

D. Sand, Iowa Natural Heritage Foundation, Des Moines

This project will research public policy options that reward linking the growing bioeconomy to environmental stewardship. It will explore and articulate some traditional funding options as well as some new, creative ideas. The ideas will evolve and improve during the project, as a variety of perspectives and information emerge during a series of interviews.



Dairy-based projects

A special call was issued in 2006 for cross-initiative projects that targeted the challenges and opportunities for grass-based and/or organic dairies in Iowa.

Developing organic/grass-based dairies in southwest and southern Iowa, 1 year, extended

D. Houghtaling, GROW Iowa Foundation, Greenfield and S. Adams, ISU Extension, Malvern

How can we encourage more people to consider grass-based dairy production and promote dairying as a viable value-added agricultural opportunity in Iowa? Investigators have compiled a database of names from Jersey and Holstein associations, targeting dairy-producing states (New York, Pennsylvania, California, Texas and Ohio). They are creating a list of local realtors to keep them informed about any ground that comes up for sale or auction. They also are working with the Natural Resources Conservation Service and Farm Services Administration to determine which CRP tracks will be coming out of retirement between now and 2011.

Some interest in dairying has been noted in Rock Rapids and possibly in Carroll. Investigators also may work with a new group called the Midwest Organic Dairy Producers Association.

Sustainable economic development through organic and grazing dairy farm establishment and transition, 3 years, extended

L. Tranel, ISU Extension, Dubuque; and R. Tigner, ISU Extension, New Hampton

This project aims to provide financial and production information about model grazing farms for other beginning and transitioning dairy producers who aspire to establish profitable dairy operations. Financial analysis of model dairy operations will be done in 2008 for 2007 data. This data is or will be presented in a format for producers to use to help benchmark their beginning or transitioning dairy operations. The results are still in process for the financial data. A Power Point presentation on "Building Your Own Low Cost Parlor" is available at connect.extension.iastate.edu/parlor. A "Low Cost Milking Parlor" publication PM2033 can be viewed at www.extension.iastate.edu/Publications/PM2033.pdf



If there is magic on this planet, it is contained in water.

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