



## Conference celebrates Center's first 20 years

The Leopold Center will mark two decades of innovative research and creative solutions during its 20th Anniversary Celebration July 10-11 at Iowa State University. Activities will highlight the Center's many partners and successes and, more importantly, explore future challenges and obstacles to the sustainability of Iowa's agricultural landscape.

"Don't expect typical presentations and the usual conference fare," said Leopold Center Director Jerry DeWitt. "We are looking at a variety of approaches to better engage everyone who attends these events. The Leopold Center's work over the past 20 years has been anything but business as usual; likewise with the celebration."

Holding true to that promise, the extensive event schedule begins July 10 with five optional tours leaving from the Iowa State Center (see page 8 for descriptions). July 11 activities in ISU's Scheman Building include more than 20 breakout sessions during the day-long conference as well as posters and displays that highlight Leopold Center-funded research. During the lunch break, conference goers can attend an outdoor festival featuring live music, interactive displays and demonstrations and, of course, a locally sourced meal. The schedule also allows time for networking

**ANNIVERSARY** (continued on page 8)

## Yields increase, soil resilience soars; Long-term research proves organic promise

By ANNE LARSON, Special to the Leopold Center

Coupling long-term cropping research with rigorous replication yields reliable results. That's the premise that drove establishment of the Center's Long-Term Agroecological Research (LTAR) initiative in 1998 at the Neely-Kinyon Research Farm near Greenfield. The study is believed to be the largest randomized, replicated comparison of organic and conventional crops in the nation.

Nine years later, leader Kathleen Delate, Iowa State University horticulture and agronomy professor, can display results that convincingly show greater yield, increased profitability, and steadily improved soil quality in organic over conventional rotations. The results bode well for producers looking for higher returns while building soils.

"The long-term project enables us to achieve repeatable results," Delate explains. "If you get the same results over time, they become much more credible to farmers, scientists and policymakers," she adds.

The LTAR has been funded by the Leopold Center to examine short- and long-term physical, biological and economic outcomes of certified organic and conventional grain-based cropping systems. The Neely-Kinyon farm research is testing whether organic systems relying on inputs such as composted manure can promote stable yields, soil quality and plant protection. Those results are being compared with a corn-soybean (C-S) rotation supported by greater levels

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LEOPOLD CENTER

### LEOPOLD LETTER MISSION

The mission of the Leopold Letter is to inform diverse audiences about Leopold Center programs and activities; to encourage increased interest in and use of sustainable farming practices and market opportunities for sustainable products; and to stimulate public discussion about sustainable agriculture in Iowa and the nation.

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The Leopold Center for Sustainable Agriculture seeks to identify and reduce adverse socioeconomic and environmental impacts of farming practices, develop profitable farming systems that conserve natural resources, and create educational programs with the ISU Extension Service. It was founded by the 1987 Iowa Groundwater Protection Act. The *Leopold Letter* is available free from the Leopold Center at 209 Curtiss Hall, Iowa State University, Ames, Iowa 50011-1050; (515) 294-3711.



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## Communications specialist joins Center staff

Carol Brown hit the ground running when she started work May 1 for the Leopold Center as the new communications specialist assigned to the Iowa Learning Farm (ILF) project.

Her first day took her to a monthly meeting of Iowa State University researchers and staff from five departments working on this multi-year project, now coordinated by the Leopold Center. By her third day, she was designing poster panels for a new rainfall simulator that is traveling the state to help show Iowans how conservation practices can improve water quality. Within a week, she helped transport the rainfall simulator to central Iowa, where 5,000 fifth- and sixth-graders attended the Iowa Children's Water Festival at Des Moines Area Community College.

"I'm working with the Iowa Learning Farm team to promote the project and its research findings, including innovative conservation practices and water quality improvements that help farmers remain profitable while sustaining their land's resources. These topics affect not only the agricultural community but all Iowans," said Brown.

The Leopold Center became involved in the ILF project late last year. Since that time, communications responsibilities have been shared between Leopold Center communications specialist Laura Miller, sociologist Jackie Comito who also is working on project evaluations, and Jean McGuire, ISU Extension communications specialist. About 20 percent of Brown's time will be spent on Leopold Center projects other than the ILF.

"Although I didn't grow up on a farm, I

have lived in Iowa my entire life, apart from two years in Minnesota. It's difficult not to be affected by agriculture when we are surrounded by it,"

Brown said. "I'm proud of Iowa and want to do my part to preserve its assets. I was taught a deep appreciation for Iowa's environment through my paternal grandparents and an outstanding Iowa history teacher, Michael Zahs. I'm excited to work for the Leopold Center and the Iowa Learning Farm; I believe we share the same values and pride."

Brown recently relocated to Ames with her family from Mount Pleasant in southeastern Iowa. For the past 14 years she had worked as communications and publications director for Iowa Wesleyan College. She wrote and produced the college's alumni magazine, and helped plan and promote activities and events of the college.

A native of Washington, Iowa, Brown earned a degree in graphic design from Iowa State University in 1985. After graduation, she was graphic artist for the Ames *Advertiser*, composition manager for the Ames *Tribune*, and worked for a weekly newspaper in Madelia, Minnesota.

She lives in Ames with her husband and two children.



[www.leopold.iastate.edu](http://www.leopold.iastate.edu)

More on the Iowa Learning Farm:  
[www.extension.iastate.edu/ilf/](http://www.extension.iastate.edu/ilf/)

### Center seeking ideas for new research

Iowans with research and demonstration ideas for the Leopold Center are invited to submit their pre-proposals by August 17. A Request for Pre-proposals (RFP) with information on the application process will be available in early July on the Center's web site at: <http://www.leopold.iastate.edu/research/rfp/2007.htm>.

Investigators representing any Iowa nonprofit organization/agency and/or educational institution (such as soil and water conservation districts, schools and colleges, and regional development groups) may submit pre-proposals; there are no restrictions on project partners or collaborators.

After August 17, the two-page concept papers will be reviewed by Center staff and Advisory Board members to assess the technical merit and relevance to the Center's mission. Requests for full proposals will be issued in mid-September following the Advisory Board discussions.

For information or to receive a paper copy, contact the Center at (515) 294-3711.

# q&a

## A conversation with Director Jerry DeWitt



### Q. What is on-farm research and what makes it important?

We often hear the term “on-farm research.” Iowa State University faculty as well as field specialists from ISU Extension conduct research on farms across the state. Farmers themselves also participate in demonstrations and other projects as they attempt to solve problems on their farms.

So what is on-farm research? First, it is more than a series of replicated test plots that just happen to be on a private farm because the farmer is cooperating with a university researcher or extension specialist. On-farm research calls for the creativity of identifying problems, discovering possible solutions and testing answers under real-time conditions. Because the work is done on-site and practices are specific to a particular farm, on-farm research requires a complex system of planning and execution.

Key to the success of on-farm research is an open dialogue between the scientist/specialist and the farmer. It requires questioning, listening, sharing interpretations, adapting techniques and methods and finally adoption at a field level. At the Leopold Center we think that on-farm research is important because it adds richness to the findings of researchers and farmers and can lead to meaningful changes in farm practices.

### Q. What is the role of on-farm research at the Leopold Center?

There are roles both for research occurring at a university farm or research station, and for research that is conducted on private farms. At the Leopold Center, we are particularly enthusiastic about research on private farms. This type of research honors the farmer's role by exploring how problems emerge in a real-life arena and then using the farmer's guidance to help solve the problem and observe interactions of variables at the field level.

The Leopold Center has a history of supporting a variety of research options. Our challenge is to balance those ap-

proaches properly so we can invest in projects that can make a significant difference on the farm. We gravitate toward those projects that involve the farmer early in the needs assessment process, conduct project planning and actual research on a working farm, and work with the farmer for dissemination and demonstration of what has been learned.

### Q. What other opportunities are there for farmers to participate in on-farm research?

Farmers in Iowa are well situated to be partners in on-farm research. The Center cooperates with and supports a number of avenues to increase on-farm research opportunities.

The Center works with the ISU College of Agriculture and Life Sciences, which funds an annual program in collaboration with Practical Farmers of Iowa. The ISU/PFI On-Farm Research Program provides competitive grants that support partnerships between Iowa farmers and ISU faculty, staff and extension field specialists to conduct small research projects on Iowa farms.

In 1992, the North Central Region (NCR) Sustainable Agriculture Research and Education (SARE) program of the U.S. Department of Agriculture began a competitive grants program exclusively to fund

producers striving for agricultural sustainability. NCR-SARE has sponsored nearly 250 producer grants worth more than \$1 million since initiating its Farmer Rancher Grant program.

PFI also operates its own statewide program for on-farm research and demonstrations among its own members. The Leopold Center has provided an annual grant to PFI that covers a portion of the costs for this program, which includes more than two dozen field days scheduled for this summer and fall.

Organic on-farm research is supported by the Organic Farming Research Foundation based in California. This competitive program, now in its 15th year, has supported 243 organic research and education projects totaling \$1.6 million, including some projects on Iowa farms.

And finally, the Leopold Center's annual call for grant project ideas also could involve on-farm research. Watch for our call for 2007 pre-proposals in early July.



Kevin Fulton and Angela Jackson inspect forage as part of an on-farm grazing research project. Photo by Jerry DeWitt

[www.leopold.iastate.edu](http://www.leopold.iastate.edu)

Opportunities for on-farm research grants:  
[www.leopold.iastate.edu/research/rfp/2007.htm](http://www.leopold.iastate.edu/research/rfp/2007.htm)  
<http://ncr.sare.org>  
[www.practicalfarmers.org](http://www.practicalfarmers.org)  
<http://ofrf.org>

## HIGH-QUALITY SOILS CYCLE NUTRIENTS EFFICIENTLY, CAN BE TAPPED BY PLANTS

**ORGANIC PROMISE** (continued from page 1)

of externally acquired inputs such as fossil-based fuels. The rotations used on the organic plots have been corn-soybean-oat/alfalfa (C-S-O/A) and corn-soybean-oat/alfalfa-alfalfa (C-S-O/A-A).

In the LTAR project, organic crop yields were equal to conventional acres in the three years of transition. In the fourth year, organic corn yields in the longest rotation outpaced those of conventional corn. Organic soybean, which can be grown for a price premium, also out-yielded conventional soybean in the fourth year of the rotation. The research also reported remarkable consistency of yields during the first three transitional years.

One of the things that sets the research apart in addition to its length and design, is that the plots are 42 meters by 21 meters (about 138 ft. by 69 ft., or about 0.2 acre), large enough to accommodate conventional farm equipment. Soil scientist and co-investigator Cynthia Cambardella of the USDA National Soil Tilth Laboratory says the large plots were part of what initially drew her to the research. The biggest attraction was the chance to study changes in soil quality during the transition from conventional to organic management within a completely randomized, replicated experiment.

Cambardella has monitored a number of soil quality characteristics as part of the project. Those factors include:

- soil organic carbon (C);
- potentially mineralized nitrogen (N);
- particulate organic matter C;
- microbial biomass C;
- inorganic N;
- pH; and
- soil structure.

All of these measures have some impact on soil quality. Potentially mineralized N is an estimate of the available part of N that is held in reserve in the soil, cycling and becoming available when temperature and moisture favor microbial activity. Particulate organic matter C comes primarily from the plant root systems and is an easily digestible source of energy for soil microorganisms.

Microbial biomass C comes from the bodies of soil organisms and is one of the most easily digestible food sources in the soil. The nutrient needs of organically managed crops are met entirely through the recycling of nutrients from crop residue, roots, green manures and added amendments. High-quality soils cycle nutrients more efficiently and make them available when and where the plants need them.

The organic plots are amended in early spring with composted swine manure, made from a mixture of manure and corn stover that was removed from deep-bedded swine “hoop house” structures located nearby. The organic plots are disked, rotary-hoed and cultivated, with an average of two row cultivations per year.

On the organic plots, the organic matter from the composted manure quickly helped enhance the resilience of the soil.

“Key to this is organic matter and the supply of nutrients,” Cambardella explains. “Biologically active nutrients can be tapped by the plant when



[www.leopold.iastate.edu](http://www.leopold.iastate.edu)

For year-by-year comparisons, go to Research Reports on the ISU Organic Ag site: <http://extension.agron.iastate.edu/organic/>



*Kathleen Delate presents information at the August 2006 Neely-Kinyon field day, which drew more than 200 people. Below, an aerial view, other views of the field plots.*



temperatures and moisture will drive availability,” she adds.

“The exciting news is that, rather quickly, easily decomposable N began to be reserved in the soil in forms that are not subject to leaching with spring rains,” Cambardella says. Soil structural stability also remained good, despite the increased tillage involved with the organic rotations.

Cambardella has observed a number of factors that point toward improved soil health on the organic plots, as compared with conventional C-S. After seven years of organic management, she has seen:

- more soil organic C,
- more biologically-active organic matter,
- reduced soil acidity, and
- maintained or improved crop yield.

Delate says the ultimate benefit of the long-term project will be to maximize confidence in the data and to monitor any unexpected results that appear over longer periods of time. Researchers will continue to examine the effects of crop sequence and length on long-term pest disruption and attraction of beneficial insects to the organic system.

Organic cropping systems help build soils, but can they also help build local communities? Three researchers explored that question using a unique policy in Woodbury County in which producers receive tax abatements when they transition from conventional to organic cropping systems. Read about the results on the Leopold Center web site: [www.leopold.iastate.edu/research/marketing\\_files/woodbury.htm](http://www.leopold.iastate.edu/research/marketing_files/woodbury.htm).



TOWARD A SUSTAINABLE

Future

## How long will we continue to fiddle while Rome burns?

*... our continued devotion to growth above all is, on balance, making our lives worse, both collectively and individually. Growth no longer makes most people wealthier, but instead generates inequality and insecurity. Growth is bumping up against physical limits so profound – like climate change and peak oil – that trying to keep expanding the economy may not just be impossible but also dangerous. And perhaps most surprisingly, growth no longer makes us happier. — Bill McKibben, Deep Economy*

In 1975, the distinguished National Academy of Sciences' Panel on Climatic Variation reminded us that "the global patterns of food production and population that have evolved are implicitly dependent on the climate of the past century." The panel further suggested that "our vulnerability to climatic change is seen to be all the more serious when we recognize that our present climate is in fact highly abnormal, and that we may already be producing climatic changes as a result of our own activities."

For more than 30 years scientists, in other words, have known that the increased food production of the previous 60 years, which had "fed the world" and "saved the lives of millions of people," was not only the result of new "green revolution" technologies but also sprang from unprecedented favorable global climate conditions of the past century. In addition, scientists have known for this same period of time that we are engaged in human activities (many related to green revolution technologies) which threaten to further destabilize our climate in the future. And the same panel of prominent scientists warned us that "this dependence of the nation's welfare" on unusual climate stability "should serve as a warning signal that we simply cannot afford to be unprepared for either a natural or manmade climatic catastrophe."

If that is not sobering enough, internationally renowned climatologist Tim Flannery, who has studied the history of climate in North America (see *The Eternal Frontier*), says that the continent will be particularly vulnerable to climate change. Due to our unique place on the planet, when the earth cools by 4 or 5 degrees Celsius, America's *heartland* tends to chill by around 10 degrees Celsius.

Given these warnings, one would think we might take the lead in mitigating climate change and preparing for our uncertain future. Sadly, that has not been the case.

I suspect that one of the reasons we fail to take the overwhelming evidence in climate science seriously is that we continue to subscribe to an economic paradigm that makes us reluctant to take precautionary action. Our prevailing economic mythology prompts us to believe that *growth forever* is the only avenue to economic health and well being. But as economist Joseph Schumpeter has pointed out, such paradigms are based on a "preanalytic vision" that is an intellectual construct, not an eternal truth. Therefore we can – and often need to – change it!

Economist Herman Daly has argued for many years that we desperately need to alter our preanalytic vision. He points out that our human economy is not a bubble floating in space but a "subsystem of the global ecosystem" and our global ecosystem is *limited*. Consequently, continued growth is untenable.

Daly argues that we must shift now to a new "preanalytic vision" based on "ecological economics" that would always determine "when the benefits of continued growth in the economic subsystem are outweighed by the increasing opportunity costs of encroaching on the sustaining ecosystem." In other words, when growth begins to undermine the health of the very system that makes economic growth possible, then we need to establish commercial rules that "keep the economy within its 'optimal' size range."

The time for academic debate on these matters is now running out. We must *act*. Besides, as Bill McKibben points out, it is now in our own self interest to act.

We must reduce our ecological footprint if we are to preserve the "health of the land." As Leopold observed, "health is the capacity of the land for self-renewal." Without that capacity there can be no economic growth, let alone sustainable agriculture. And we are seriously undermining that capacity.

While we face enormous challenges in redesigning our economies, including agriculture, there are things we can all do now. The April 9 issue of *Time* magazine listed 51 things that all of us can do to make a difference [[www.time.com/time/specials/2007/environment](http://www.time.com/time/specials/2007/environment)]. National Public Radio has featured a series of programs with suggestions we can all adopt [[www.npr.org](http://www.npr.org)]. The American College and University Presidents Climate Commitment has developed a long list of steps that can be initiated on college and university campuses [[www.presidentsclimatecommitment.org](http://www.presidentsclimatecommitment.org)]. As of this writing, 239 presidents have accepted the challenge.

If self interest is not sufficiently compelling, perhaps the fact that the future of our children – as well as the future of the children of all of earth's species – now is also at stake, can motivate us to make the necessary changes. Kathleen Moore, chair of the Department of Philosophy at Oregon State University, has framed all of this as a poignant question: "What will our grandchildren say?" She then imagines a letter from her grandchild, written to her from the future, which says in part:

*How could you not have known? What more evidence did you need that your lives, your comfortable lives, would do so much damage to ours? And if you knew, how could you not care? What could matter to you more than your children, and their babies? How could a parent destroy what is life-giving and astonishing in her child's world? And if you knew, and if you cared, how could you not act? What excuses did you make? And now, what would you have us do?*

*Julie K. Ketchum*

## A look back: Twenty years of promoting idea, ideals of sustainable agriculture

By NEIL HAMILTON Guest columnist



As we celebrate 20 years of activities for the Leopold Center, my words to best describe this history are innovation, responsiveness and evolution.



The Center was created by the Groundwater Protection Act of 1987, itself a critical marker in Iowa's legal history that set out our rights as citizens to enjoy clean groundwater and our obligations to protect it from degradation. The context for creating the Leopold Center was recognition of the need to confront the reality of modern agricultural production, which threatened not just the soil and water resources on which Iowa exists but our state's longstanding commitment to the ideals of stewardship.

The agriculture of today has made important strides in addressing issues of natural resource protection, but exploitive attitudes toward the environment coupled with new demands on our agricultural resources mean the role of the Center in confronting the realities of modern agriculture has not waned. The lens of history allows us to see the Leopold Center's creation as one of several important policy developments in the late 1980s, which now shine as a late 20th century flowering of Leopold's land ethic – or at least our version of it. Passage of the landmark conservation title in the 1985 farm bill, which created the powerful Conservation Reserve Program and added the terms sodbuster, swampbuster and conservation compliance to our agricultural lexicon, is another symbol of this era.

Today the Center's mission has broad-

*Neil Hamilton has served on the Leopold Center advisory board since its inception in 1987. He is director of the Drake Agricultural Law Center and the Dwight D. Opperman Distinguished Professor of Law at the Drake University School of Law. He and his wife have a 10-acre garden farm near Waukee and raise fresh vegetables for several local restaurants. Hamilton grew up on a 200-acre farm in Adams County, where his family has farmed since 1872.*

ened to reflect a more comprehensive vision of the meaning of sustainability. In the early years the Leopold Center was directly engaged in the debate over the definition, meaning and effect of the term "sustainable agriculture." Important questions of what it was, who it threatened – and who it might benefit – helped drive the political debate and shaped the environment in which the Center's work was scrutinized. But the Center was created as a research institution charged with developing new knowledge and insights for how agriculture could be made more sustainable.

A key question in these early years was how the research community at Iowa State and other institutions would respond to our call for new research and new interdisciplinary ways to organize it. In some ways the Center's challenge was like turning the head of a powerful steed. But the vision of sustainability, the challenge of serving agriculture, and the availability of new research money proved to be powerful inducements. The rewarding news was that a community of researchers, academics – and, of course, farmers as seen in the ranks of the Practical Farmers of Iowa – was interested in the idea of sustainable agriculture and was anxious and willing to work with the Center.

The Center helped all these communities see how the concept of sustainable agriculture could be a unifying theme – one marrying the farmer's natural concern for economic profitability with a desire for environmental stewardship. In many ways, the test and success of these past 20 years has been how well the staff, board and research community have lived up to the challenge of Aldo Leopold's legacy. The early focus of the Center was almost exclusively on resource and environmental issues. This was natural, given the source of the law and a funding stream generated from a tax on nitrogen and pesticide registration fees. There were several early successes that showed the promise of the Leopold Center and the hint of greater things to come. These stories are told in the pages of its annual reports.

But as years passed, the recognition grew that the Center's efforts were too

one-dimensional. Focusing only on resources meant the value and potential of people, food and communities were not being realized. So in the late 1990s the Center staff and advisory board undertook an intentional effort to broaden the Leopold Center's work to capture more fully the guidance in the statutory definition of sustainable agriculture. The most successful component of that work has been in the area of food systems – especially examining the operation of Iowa's food system and identifying and supporting valuable citizen-led efforts to seek new opportunities within.

We have seen great results. As society recognized the importance of healthy food, the Center worked to fill a void created by the lack of institutional work on food system analysis. The Center is playing a critical, catalyzing role and leading with original research, perhaps best reflected in Rich Pirog's groundbreaking "food miles" work that remains the Center report most frequently downloaded from the Internet.

Similar leadership is being provided by the Center's "agriculture in the middle" initiative. The key is keeping people and policy makers focused on the type of family farm structure so critical to our state – even while this type of farming may be declining in other agricultural regions.

Now as the leadership of the Leopold Center, Iowa State University, the General Assembly and the state look forward, the question remains: what is the role of sustainable agriculture? One important role for the Leopold Center is to help all of us ask the difficult questions and engage in the search for answers and alternatives. Our current rush to seek opportunities in renewable energy from agriculture raises many such questions – is it sustainable, can its economic benefits be spread more evenly and equitably across the landscape of rural America? These are issues the Leopold Center can and will help us address. As we craft the 2007 farm bill, the wisdom of the Leopold Center's founders – visionaries like Paul Johnson and David Osterberg – becomes even more clear and the vital need for and role of the Leopold Center even more apparent.

## Leopold Center played key role supporting basic soil tests

By ANNE LARSON, *Special to the Leopold Center*

Soil testing has become an integral part of today's agriculture. Whether done by a farmer or a crop advisor, the economic and environmental importance of soil tests has been linked with public policy that requires careful management of nitrogen (N) and phosphorus (P).

Most recently, the Center has supported efforts to educate farmers regarding the P-Index, a tool developed by scientists from ISU, the United States Department of Agriculture (USDA) National Soil Tilth Laboratory, and the USDA Natural Resources Conservation Service (NRCS). The Leopold Center funded research by ISU agronomy professor Antonio Mallarino and the now-retired James Baker (ISU Agricultural Biosystems and Engineering) for the development of the P-Index and explored soil P thresholds.

Iowa's N-management programs have been in place since 1982, with initiation of the Big Spring Basin, Integrated Crop Management, and Model Farm demonstration projects. The Iowa Groundwater Protection Act of 1987 created the Leopold Center and as well as other initiatives to protect water resources.

Through the years, the Leopold Center has been a key player in development and implementation of improved soil tests for various nutrients, following its legislative charge to "identify and reduce the negative environmental and socio-economic impacts of agriculture" and "research and assist in developing emerging alternative practices that are consistent with a sustainable agriculture."

The N and P management tools have markedly different histories but both have the potential to reduce costs and off-site environmental effects of fertilization while maximizing crop benefits.

### N test effective, use grows slowly

Groundwater testing in the early 1980s showed alarming rates of nitrate in Iowa. Nitrogen moves easily in the soil profile and is water soluble so careful and timely application of the nutrient is crucial. Acknowledging the public health consequences of such elevated concentrations, efforts were initiated to encourage reduced rates of fertilization.

An important focus of these efforts was to move farmers away from simple goal-based recommendations to a system that accounts for influences such as weather,

and the form or timing of N fertilizer application, all of which figure heavily into losses and availability of N to the crop.

Among the Center's early efforts was development of the late-spring soil test for nitrogen, developed at Iowa State University by the late Alfred Blackmer and based on prior work done by the University of Vermont's Fred Magdoff. Throughout the early 1990s, the Center supported a variety of work by Blackmer and others evaluating the effectiveness of the test and exploring producer attitudes about the test.

The N-Trak soil test kit developed by Blackmer was marketed by Hach Company to test soil nitrate when corn reaches six to 12 inches tall. Research showed that this time frame was optimal for achieving corn response from N application.

Blackmer's work also confirmed that losses of N fertilizer soon after application were important, that the yield goal has little or no impact on the optimum N fertilization rate, and that carryover N was less important than generally believed. That research and other projects resulted in current ISU guidelines for N fertilization that do not consider yield goals.

Although the late-spring soil test was introduced in 1990, it was not readily adopted by Iowa farmers. A Leopold Center-sponsored study showed that less than one-half of 1 percent of farmers had purchased the test kit, and many of those didn't use the kit even though they owned it.

By 2002, Paul Lasley's Iowa Rural Life Poll showed that 12 percent of farmers were testing at a moderate to heavy rate. There are no recent surveys available on use of the test, but it appears that some inroads have been made in changing producer attitudes about testing for the amount of N needed at a time when response will be most dramatic.

One of the barriers that kept farmers from testing soil samples in late spring was the time it took to get results back from a lab. They need a quick turnaround to permit timely sidedressing. The Hach Chemical kit allowed growers or consultants to analyze their own samples in a matter of minutes. Now most commercial labs provide the analysis in 48 hours or less, thus eliminating the need for individual test kits. Many different types of kits also are commercially available and used by crop consultants. In recent years, government programs such as EQIP and CSP have be-

gun to provide incentives to growers who use this test.

To date, no other method of making N fertilizer recommendations has shown as high an accuracy as the late-spring nitrate test in Iowa. The development of this test has helped increase growers' profitability, but at the same time it often has reduced the total amount of N applied. The biggest benefit is that it has provided a data-based system for N management and evaluation.

A review of Leopold Center grants shows that since 1992, the Center has invested about \$260,000 in projects aimed at developing, fine-tuning, and assessing adoption of the late spring soil nitrate test.

**EDITOR'S NOTE:** *Many thanks to Antonio Mallarino, who reviewed and helped prepare this article, and to the Iowa Soybean Association, which also contributed information used in this report.*



*ISU agronomy professor Alfred Blackmer, who died in 2006, worked directly with hundreds of farmers to promote soil testing. He received the 2006 Master Farmers Exceptional Service Award for his efforts.*

*Photo by Rod Swoboda, Wallaces Farmer*

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Read about the development of the P-Index in our on-line version at:  
[pubs/nwl/2007/2007-2-leoletter/soiltests.htm](http://pubs/nwl/2007/2007-2-leoletter/soiltests.htm)

## Center publishes volume of 2006 research results

What did Iowa farm women have to say about the 2007 Farm Bill deliberations? How can buffers help stabilize western Iowa's Loess Hills soils? Can local food producers use contracts to expand their market opportunities with foodservice outlets? Does fire have a future as a management tool for grassland reserves?

These are just some of questions answered in the findings from 20 Leopold Center competitive grants projects that appear in the new 2007 *Center Progress Report*. Now available in print and on-line, the sixteenth in an annual series of reports begun in 1992 describes projects supported by the Center's three research initiatives: Ecology, Marketing and Food Systems, and Policy.

Summaries are condensed from final reports submitted by principal investigators, who approved them prior to publication. Contact information appears at the end of each summary for those who want more information from the principal investigator. For information about ongoing Center projects, annual progress reports are available from the Center.

Support for the competitive grants administered by the Center is provided through the state of Iowa educational appropriations and from the state's Agriculture Management Account, generated from fees charged on nitrogen fertilizers and pest control chemicals sold in Iowa.

Paper copies of the 2007 *Center Progress Report* are available from the Center office.



[www.leopold.iastate.edu](http://www.leopold.iastate.edu)

2007 *Center Progress Report*:  
[www.leopold.iastate.edu/research/grants/completed\\_grants.htm#Center\\_Progress\\_Report](http://www.leopold.iastate.edu/research/grants/completed_grants.htm#Center_Progress_Report)

## BREAKOUT SESSIONS IN FOUR 'HOT ISSUE' TRACKS

**ANNIVERSARY** (continued from page 1)

with Center partners and professionals from across the country.

Keynote speaker for the July 11 conference will be Mark Ritchie, newly elected Minnesota Secretary of State and founder of the Minneapolis-based Institute for Agriculture and Trade Policy. A 1972 ISU graduate, Ritchie grew up in Nevada, and is an active proponent of long-term sustainability for agriculture and rural communities. His keynote address is "Sustaining Agriculture, Sustaining Democracy."

Breakout sessions for the conference are organized along four "hot issue" tracks: Food and Health, Bioeconomy, People on the Land and Natural Resources. A general track will offer four sessions – about Aldo Leopold's legacy, what's been learned in organic agriculture research, and a chance to view several multi-media projects.

Headlining the Food and Health track will be nutritionist and author Joan Dye Gussow, who wrote *This Organic Life*. She will join Iowa nutritionist Angie Tagtow to discuss issues related to food, health and the environment. Other sessions include an Iowa local food demonstration by chefs from two university dining services, an overview of local food accomplishments and future challenges, and a discussion about the process of bringing dairy products from an Iowa farm to ISU.

Six sessions are planned for the Bioeconomy track, ranging from wind energy and new cropping systems to sessions that explore an on-line farm planning tool and recycling processed ash from ethanol plants. In another session, four panelists will present their visions of an energy-efficient landscape for Iowa.

The People on the Land track considers four types of "capital" – ecological, human, social and economic – that make up what Aldo Leopold termed "the land community." Breakout sessions will look at opportunities for beginning farmers, how to maintain the land's capacity for self-renewal, diversification, the role of nature education, and policies that will help move farmers toward ecologically sound and profitable systems.

Sessions in the Natural Resources track look at "rethinking agriculture" in terms of soil and water, plants and animals and a "living land." Three sessions will use a 3X3X3 format: three panelists with three minutes to respond to provocative essays, followed by responses from farmers.



[www.leopold.iastate.edu](http://www.leopold.iastate.edu)

20th Anniversary Conference:  
[www.ucs.iastate.edu/mnet/leopold/home.html](http://www.ucs.iastate.edu/mnet/leopold/home.html)

Breakout session descriptions:  
[www.ucs.iastate.edu/mnet/leopold/level1.html](http://www.ucs.iastate.edu/mnet/leopold/level1.html)

Tour information:  
[www.ucs.iastate.edu/mnet/leopold/about.html](http://www.ucs.iastate.edu/mnet/leopold/about.html)

### Heaven in Iowa!

That's the destination for this tour – places in northeast Iowa that bring a taste of heaven to Iowa with their homemade pie and dairy-fresh ice cream. This full-day tour from Ames to Waterloo and back again is one of five Leopold Center anniversary tours on July 10. Space is limited, so register early. Other tours will take you to:

- Whiterock Conservancy near Coon Rapids (plus a stop at an chemical-free apple orchard),
- Biomass Energy Conversion Center in Nevada as well as a look at one cropping system of the future,
- Bear Creek Demonstration Watershed project in Story County (and an urban rain garden – what homeowners can do for water quality), and
- Grapevine field plots and local organic winery.

### Midday outdoor festival

No celebration is complete without a festival, and that's exactly what conference-goers will find on July 11. The courtyard behind the Scheman Building will be filled with interactive displays, demonstrations and equipment, plus an outdoor lunch.

Bring your camera to take a picture of yourself in "American Gothic." See earthworms, switchgrass, how soil cores are taken and a machine that simulates rainfall. New fertilizer application technology, which began with a Leopold Center grant and has been selected among the top 10 agricultural inventions within the past 20 years, also will be on display with one of its inventors.

The Onion Creek Cloggers from central Iowa will perform, and two Iowans whose place-based food specialties are featured on a new web site, will offer samples.



# Registration form

Leopold Center 20th Anniversary Celebration  
 July 10 - Tours; July 11- Full-day Conference  
 Scheman Building, Iowa State University, Ames, Iowa

FIRST NAME _____		LAST NAME _____	
ORGANIZATION _____		TITLE _____	
EMAIL _____		DAY PHONE _____	
MAILING ADDRESS LINE 1 _____		EVENING PHONE _____	
MAILING ADDRESS LINE 2 _____		FAX NUMBER _____	
CITY _____	STATE _____	ZIP CODE _____	



PLEASE SELECT ONE SESSION IN EACH TIME PERIOD BELOW.

**BREAKOUT SESSION 1 (10-11 A.M.)**

- 4. Fish Bowl Discussion: On-Farm Energy Conservation
- 7. Healthy People and Landscapes: Iowa's Future Food System
- 12. Maintaining the Land's Capacity for Self-Renewal
- 17. Rethinking Agriculture for Healthier Soil and Water
- 20. Twenty Years of Organic Agriculture: Sustainable Impacts
- 22. America's Lost Landscape, the Tallgrass Prairie

**BREAKOUT SESSION 2 (12:30-1:30 P.M.)**

- 2. Ash Recovery: Closing the Loop in Biofuel Production
- 8. Developing a Vibrant, Sustainable Regional Food System: Northeast Iowa
- 11. Building Local Food Networks in Iowa: Progress and Potential
- 13. Opportunities for Beginning and Begin-Again Farmers
- 14. Fish Bowl Discussion: Diversification on the Farm, in Rural Communities
- 18. Rethinking Agriculture for a Living Land
- 23. Telling the Sustainable Agriculture Story

**BREAKOUT SESSION 3 (1:45-2:45 P.M.)**

- 3. New Cropping Systems for Cellulosic Feedstock, Environmental Stewardship
- 6. Planning and Energy-Efficient Landscape for Iowa
- 9. Fish Bowl Discussion: A Walk Across the Food System
- 15. No Child Left Inside: Helping the Next Generation Discover a Sense of Place
- 19. Rethinking Agriculture for Healthier Plants and Animals
- 21. Learning from Aldo Leopold's Legacy
- 22. America's Lost Landscape, the Tallgrass Prairie

**BREAKOUT SESSION 4 (3:30-4:30 P.M.)**

- 1. Harnessing the Wind
- 5. Create Your Own Virtual Farm for Biomass
- 10. Food Preparation Demonstration: Iowa Local Foods Show
- 16. Policies to Help Farmers Move toward Ecologically Sound, Profitable Farming
- 23. Telling the Sustainable Agriculture Story

TO ATTEND A PRE-CONFERENCE TOUR, SELECT OPTION BELOW:

- A. Full-day: Culture in Agriculture, \$35
- B. Full-day: Heaven in Iowa! \$35
- C. Half-day: Water Quality, \$20
- D. Half-day: Biomass, \$20
- E. Half-day: Black Soil/Purple Lips, \$20

**IT'S EASY TO REGISTER!**

**MAIL—**

**REGISTRATION DEPARTMENT**

Iowa State University Conference Services  
 102 Scheman Building  
 Ames, IA 50011

**FAX—**

(515) 294-6223

**ONLINE—**

[www.ucs.iastate.edu/mnet/leopold/home.html](http://www.ucs.iastate.edu/mnet/leopold/home.html)

**CANCELLATION / SUBSTITUTION POLICY:**

Cancellations received through 5 p.m., Thursday, July 5 will receive a full refund less a \$15 cancellation fee. No refunds will be given after 5 p.m. July 5, 2007.

For questions about registration, contact Haley Cook, (515) 294-0196, [ucs-info@iastate.edu](mailto:ucs-info@iastate.edu).

For questions about program content, contact Malcolm Robertson, (515) 294-1166, [malcolmr@iastate.edu](mailto:malcolmr@iastate.edu)

Iowa State University requests this information to pre-register you in a conference. No one outside the university, with the exception of participants in this conference, is routinely provided this information. If you fail to provide the required information, we cannot promise accurate registration. (Reference: Iowa Code, Chapter 22.11; Iowa Fair Information Practices Act).

**METHOD OF PAYMENT**

- Check** (Payable to Iowa State University, reference Leopold Center)
- Credit card**  Visa  MasterCard  Discover  
 Card Number \_\_\_\_\_ Exp. Date \_\_\_\_/\_\_\_\_  
 Cardholder Name \_\_\_\_\_  
 Signature \_\_\_\_\_
- Purchase Order** (Provide billing address below if different from above)  
 PO Number \_\_\_\_\_  
 Send Invoice to: Name \_\_\_\_\_  
 Billing Address \_\_\_\_\_  
 Telephone / Fax \_\_\_\_\_

**ONLY ONE REGISTRATION PER FORM. DUPLICATE FOR ADDITIONAL ATTENDEES.**

- \_\_\_\_ \$35, Full-day Tour Fee
- \_\_\_\_ \$20, Morning Tour Fee
- \_\_\_\_ \$20, Afternoon Tour Fee
- \_\_\_\_ \$35, Early Conference Registration Fee (on or before June 11)
- \_\_\_\_ \$50 Late Conference Registration Fee (after June 11)

Other:

- Would like vegetarian option for lunch
- Have other special needs/requirements:

**TOTAL PAYMENT DUE: \$ \_\_\_\_\_**

# An April evening in Ames with Wendell Berry attracts many fans

By LAURA MILLER Newsletter editor

Over the past three or four decades, Kentucky farmer, philosopher and author Wendell Berry has become, as moderator and ecologist Laura Jackson observed, “our poet laureate” for sustainable agriculture, the environmental movement and a world based on the strength of its local communities. Berry rarely makes public appearances, allowing the rich abundance of his work to speak to his audiences.

So it was no surprise that Berry and his daughter, who farms in Kentucky only a few miles away, drew big crowds when they visited Iowa State University on April 15.

Wendell Berry and Mary Berry Smith were the guests of the Leopold Center, which organizes the annual Shivers Memorial Lecture. They joined Iowa farmers Laura Krouse of Mt. Vernon, who has a small farm and CSA operation and teaches biology at Cornell College; and grass-based dairyman Francis Thicke of Fairfield for a free-wheeling discussion about agriculture. Topics ranged from the economics of growing hemp and confined animal feeding operations to the value of genetic engineering and buying locally grown meat, fruit and vegetables.

The Sunday evening event attracted between 750 and 800 people for a lively session that overflowed the Great Hall in the Iowa State Memorial Union. Audience members included faculty and students as well as people from Des Moines, central Iowa and places beyond as fans drove from Nebraska, Kansas, Missouri and Minnesota to hear Berry speak. And in spite of a balky sound system, panelists managed to keep their sense of humor and the audience engaged in a back-and-forth discussion that stretched to nearly two hours. The following excerpts come from that evening.

## About solving problems on their own farm:

**Berry:** I am probably the most marginal farmer imaginable. We have a small flock of sheep and we deal all the time keeping them in the pastures. I don't have a single animal on my farm who believes anything I say. Our best crop from an agricultural point of view is our children and now our grandchildren ... There are no final solutions to any of the problems I have in farming and that's probably a good thing.

**Berry Smith:** We farmed conventionally for five or six years, through serious droughts, serious times ... We not only were not making any headway at all on paying off our debt but we were wearing out the farm. So we began the change that continues... What we're doing now is we're making a place for our children, we're keeping it together for them, like it was kept for us and how it was kept for my father. That gives us hope and things are all right.

**Krouse:** I take a great amount of enjoyment to produce food that kids can eat on the way home, that doesn't need a lot of processing to make into something they like.

**Thicke:** On our farm we try to make the pieces work together... We have a grazing farm with 60 paddocks so after each milking the cows go to a fresh piece of grass ... I think we can actually farm and have animals on the farm that can improve the environment, improve soil quality.

## About similar problems they face:

**Berry:** I think the problem everywhere is to keep the ground covered. In Iowa you have these long rows and as I understand it, that's an enormous problem because the water washes right down the rows. At home, our land may erode more quickly but in Iowa erosion can be pretty hair-raising.

**Krouse:** I've been a soil commissioner for a long time. The water isn't any cleaner and it's very sad. When farms change hands, they almost always go to larger equipment and the beautiful terraces and contours go away ... it's very discouraging.

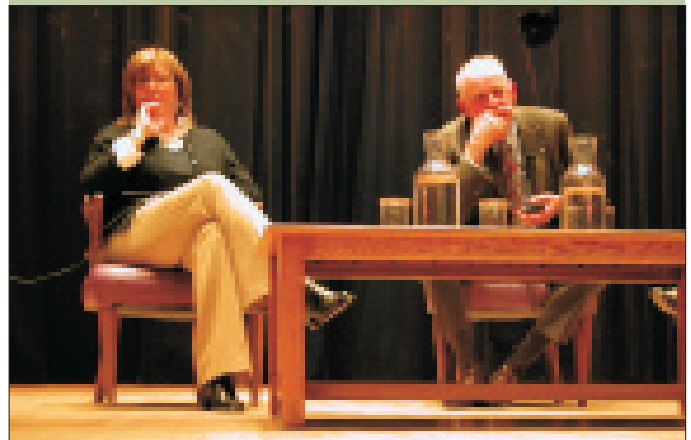
## About ethanol:

**Berry:** It reveals how frivolous our agriculture policy is. It wasn't too long ago that the great drama of agriculture was to grow food and feed the world. And now suddenly we've

*BERRY (continued on page 11)*



*Conversation participants (from left): Francis Thicke, Mary Berry Smith, Wendell Berry and Laura Krouse.*



*Berry Smith and her father ponder an audience question.*



*Berry and his daughter make connections with GPSA students at the Maintenance Shop in the ISU Memorial Union.*

## DISCUSSION RANGED FROM ETHANOL TO GENETIC ENGINEERING, LOCAL FOODS

**BERRY** (continued from page 10)

changed to the drama of fuel. Weren't we serious all those years about feeding the world? And how serious are we willing to be about our cars? I've heard a lot about "green patriotism," that only six percent of our land would be given to fuel. But suppose you lose some of your corn crop. Are people going to have to choose between fuel and food?

**Krouse:** We're seeing CRP [Conservation Reserve Program] land being dug up, headlands and waterways destroyed, which I am presuming is for more corn. But I don't think farmers really believe that it's really that great of a deal, either.

**Thicke:** I read somewhere that if we could increase our passenger car mile efficiency from 25 to 26 miles per gallon that we could save more fuel than all the ethanol we're producing today.

### About being able to afford to farm

**Berry Smith:** I can tell you what we did in Kentucky. We stepped out of another person's marketplace and formed our own market where we had some control over the price. We sold organic vegetables, pastured poultry and we're now selling wine. We have no interest in the global marketplace; we are interested in people coming to our place to get our products.

### About investing in a local food economy

**Berry:** You can't have a local food economy unless you have urban agrarians who are willing to buy it. ... What we're talking about is local adaptation. Modern biology is based on adaptation, but somehow we've worked to be excused from that obligation. To belong together in a place is knowledge we've lost, and we've got to get it back. The drama that I see now is whether our lives will be run by a few minds or by many... The possibility inherent in a local food economy is the possibility for local adaptation, real communities, real multi-culturalism.



### Who should be the next Shivers speaker?

Wendell Berry's visit to Ames was funded in part by an endowment to the Iowa State University Foundation from the family of L.C. (John) Shivers, who farmed near Knoxville, Iowa. The annual Shivers Lecture is designed to focus on:

- Ways in which agriculture can sustain rather than destroy natural resources;
- The responsibility of agriculture to sustain not only the land but also the farmer, especially young and/or small farmers; and
- Agriculture as part of the interdependent web of all existence.

Fred Kirschenmann, Leopold Center Distinguished Fellow who has worked with the Shivers family to schedule the event, said they are interested in inviting suggestions from the public for topics and potential speakers for future lectures. They also would like to involve more Iowa farmers in future lectures and discussions. Send ideas to him at: leopold1@iastate.edu, or call the Center, (515) 294-3711.

At the request of Wendell Berry, the Leopold Center made arrangements for him and his daughter, Mary Berry Smith, to have lunch with students in Iowa State's Graduate Program in Sustainable Agriculture (GPSA). More than 20 students took advantage of the opportunity, in spite of their busy schedules near the end of the spring semester. Here's a report from one student.

## Learning from Wendell Berry

By ANDY LARSON, Leopold Center MBA graduate assistant

When I handed Wendell Berry my copy of his book, *The Art of the Commonplace*, a compilation of his essays on agrarianism, for his signature, I did not realize that he viewed these essays' continued relevance as something of a disappointment. Berry shared that he had hoped the book's concerns – insights and critiques on the eroding condition of domestic culture and agriculture, many penned and published decades ago – would have become obsolete as people developed a greater sense of connectedness with their food, rootedness in their place, and reverence for their use of creation. For better or for worse, his ideas remain as pertinent, or more so, in today's society as when they were originally conceived.



Some ask: If farming only accounts for 3 percent of our country's Gross Domestic Product, why shouldn't farming responsibilities be reallocated to parts of the world where the populace is more attuned to the work and the lifestyle? Berry attributes this mental and social shift toward agriculture to "industrialization." We have adopted a quantitative standard for progress; we ask how many rows can we plant or harvest with one pass, and how many acres of our neighbors' land can we acquire when they sell in order to gain economic efficiencies of scale. But what is the worth of that which is now draining from farmers' tiles and bank accounts? What does the loss of that neighbor cost?

The tradition of neighborliness is not irretrievable. Pockets of it still can be found and emulated. Berry speaks of an Amish farmer with whom he is acquainted who, when stopping to rest his team of plow-horses at the crest of a hill, could see 13 other farmers and their teams who he knew would come to work his field should he be stricken by illness or death.

One of my own most vivid memories is driving home from college one autumn night to visit my grandfather on his deathbed. When turning the corner towards my family's farm, I was struck by the headlights of three combines and several familiar pickup trucks in our soybean field bringing in the last of the harvest. Our neighbors had come together to help my family finish our field-work so we could all be with my grandfather when he died.

If these examples are at all transferable, I think they prove that a more qualitative standard for community and interdependence can be valuable and progressive. We must ask whether standards for technology and progress are appropriate for ourselves and our community. If we are pressured to change in a way that goes against our values, we must, as Berry said, "stick out our bottom lip and refuse to do it." Culture and agriculture go hand in hand; one cannot change without the other.

*Larson is earning his MBA as a student in ISU's Graduate Program in Sustainable Agriculture. For the past year he has been working with the Value Chain Partnerships project coordinated by the Leopold Center and its Regional Food Systems Working Group.*



LEOPOLD CENTER  
FOR SUSTAINABLE AGRICULTURE  
209 CURTISS HALL  
IOWA STATE UNIVERSITY  
AMES, IOWA 50011-1050

# Highlight Events

## August 25 field day recognizes Center contributions

An August 25 field day will recognize the Leopold Center's unique role in on-farm research as well as offer a look at the future.

Leopold Center advisory board chair Paul Mugge and his wife, Karen, will host a Practical Farmers of Iowa field day on their 320-acre farm near Sutherland in northwest Iowa.

The Mugges are long-time PFI members and have cooperated in numerous PFI and university research projects. They raise corn, soybeans and small grains in an organic rotation and feed 2,500 pigs each year. In recent years, Paul Mugge has participated in a working group organized as part of the Value Chain Partnerships project to expand local markets for flax.

The field day will begin at 9 a.m. on the Mugge farm, located about 10 miles west of Sutherland on Highway 10. Field tour stops will look at flax trials and winter

triticale that has been overseeded with red clover. A round-robin discussion will involve participants of several Leopold Center-funded projects in the region.

At noon, activities move to the recently completed Prairie Heritage Nature Center near Peterson. Lunch will be served at the center, built on a bluff overlooking the Little Sioux River valley. The center is located on Yellow Avenue, approximately 4.8 miles south-and-southeast off Highway 10.

The afternoon program includes a walking prairie tour by O'Brien County naturalist Charlene Elyea, followed by a visioning discussion beginning at 2 p.m.

There is no registration needed to attend the field day. For more information about the morning schedule, contact the Mugges at (712) 446-2414. Information about the lunch and afternoon program is available from the Nature Center, (712) 295-7200.



Paul Mugge speaks at a 2006 field day. See a list of all summer field days, many featuring Center-funded projects, on the Center's web site, [www.leopold.iastate.edu/news/events.htm](http://www.leopold.iastate.edu/news/events.htm)

### Other Dates

**July 16, 11:30 a.m.**, Brown Bag Seminar, ISU, Ames. Dining directors from the University of Minnesota and University of Kentucky will discuss ways to increase local food use at colleges and universities.

**June 19, 20, July 24, 25 and August 16**, Product Costing Analysis Workshops for Iowa Meat Processors offer hands-on tools for small meat processors to help them better estimate cash flow and product profitability.