



LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

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Flood workshop considers causes, future actions

One speaker said it best: one thing we learned from last summer's floods was that Mother Nature always bats last.

But other lessons from the state's widespread devastation as well as large amounts of data collected from Iowa's vast river system could be characterized by hope – that resources and tools are available to help deal with future occurrences, and that serious conversations about land uses and practices could transform Iowa's rural landscape.

The Leopold Center and the Center for Energy and Environmental Education at the University of Northern Iowa hosted a workshop on December 8, "Learning from the Floods of 2008: Practical Strategies for Resilience." The Ames event brought together more than 120 people, among them farmers, urban planners, policymakers, educators, scientists and representatives from numerous state agencies and nongovernmental organizations.

"With nearly 70,000 miles of rivers and streams in Iowa, and changing land uses and weather patterns, we know we cannot prevent flooding in the future, but we can do a lot to manage the impacts," said Center director Jerry DeWitt. "We also wanted to bring in voices and issues that had not been included in the other flood response efforts to date."

The workshop pointed to the need for new flood plain maps (and the enforcement of flood plain restrictions), conservation planning at the watershed level and beyond, and public education about Iowa's river systems. Although presentations covered many topics and perspectives, there was general agreement about the need for a shared vision for Iowa's rivers and streams.

Paul Johnson, the Decorah farmer who once headed the agency responsible for federal conservation efforts, said he felt

FLOOD (cont. on page 2; more on pages 6-7)

Spencer Award goes to Carroll County grazier

An early adopter and advocate for managed rotational grazing is the newest recipient of the Spencer Award for Sustainable Agriculture. The Leopold Center has selected Carroll County farmer Steve Reinart for the honor.

Reinart owns and operates Reinart's Prairie Reds, a 500-acre grass-finished organic beef and seed stock operation near Glidden. A member of Practical Farmers of Iowa, Reinart will receive the award during PFI's annual winter conference on January 9-10 in Marshalltown.

"I have known Steve for many years and he always has been willing to share what he has learned with other producers," said

Center Director Jerry DeWitt. "He is an innovative and passionate advocate for grassland agriculture, and shows that it is possible to manage the land for future generations while operating a successful business."

The award was established in 2002 to honor farmers, educators or researchers who have made a significant contribution toward mainstream family farms in Iowa. It was named after Norman and Margaretha Spencer who farmed in Woodbury County for many years, and includes a \$1,000 stipend provided by the family.

Read more about Reinart on page 4.

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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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This issue marks the 10th anniversary of the newsletter under the direction of Newsletter Editor Laura Miller.

Leopold Center advances Iowa hypoxia discussion at October workshop

The goal of reducing the size of the low-oxygen “dead zone” in the Gulf of Mexico to 2,000 square miles by 2015 probably will not be reached, but conditions need to start improving, says the official who coordinates hypoxia reduction efforts for the U.S. Environmental Protection Agency.

Darrell Brown, chief of the EPA’s Coastal Management Branch, was a keynote speaker for a one-day workshop sponsored by the Leopold Center with support from Iowa State’s Center for Agricultural and Rural Development (CARD).

“This is a complex problem that will require cooperation and action from a number of people at a number of levels,” Brown told more than 125 scientists, policymakers and other stakeholders who gathered for the October 16 workshop in Ames. “While we’re trying to reduce the size of the hypoxic zone in the Gulf, we also want to improve the quality of the water throughout the 31 states in the watershed and make sure the communities and economic sectors are not harmed in the process.”

Brown said studies show that five states in the Upper Mississippi River Basin, including Iowa, contribute about 75 percent of the excess nitrogen and phosphorous nutrients that flow into the Mississippi River and lead to a low-oxygen “dead zone” in the Gulf of Mexico every summer. He said research also shows that about half of the nitrogen is from corn-soybean production, and 37 percent of the phosphorus is from livestock pasture on agricultural lands.

Although hypoxia is a global problem with more than 400 eutrophic zones worldwide, the size of the U.S. Gulf’s hypoxic area has more than doubled since annual measurements began in 1985. In 2008, the dead zone was about 8,000 square miles, larger than the state of Massachusetts. This tied the second-largest zone on record, which was 8,800 square

DETAILED RECOMMENDATIONS FROM FLOOD WORKSHOP EXPECTED TO BE READY BY FEBRUARY

FLOOD (continued from page 1; see also 6-7)

everyone had a responsibility, especially landowners. “We can’t expect private landowners to do a good job if they do not understand what they have,” he said. “If what they have is only seen as a cornfield or big back yard, and not seen in terms of the fact that it does process 32 inches of precipitation each year on average across Iowa, then

www.leopold.iastate.edu

To see speaker summaries from Hypoxia in the Gulf of Mexico: Implications and Strategies for Iowa:
www.card.iastate.edu/hypoxia/

miles in 2001. The long-term average is 5,300 square miles; the five-year average is 6,600 square miles.

ISU economics professor Cathy Kling was a member of the EPA’s Science Advisory Board that completed its review of the science related to hypoxia in December 2007. She said the report generated substantial interest in the research community, and a realization that many important questions remain unanswered and the solutions often are heavily interdisciplinary.

“My goal in helping to plan this conference was to keep the conversation going,” said Kling, who chaired the planning committee. “This is one step in the process of continuing to provide the research-based science that is needed to support adaptive management solutions to this highly complex and long-term problem.”

Center Director Jerry DeWitt said he was pleased with the discussions, but added that action needs to follow. “Our window for thinking, talking and planning for this issue is rapidly closing,” he said. “There are things we can and must do that will reduce nutrient runoff. It’s clear that what we’re doing is not enough and we need to have a more active, visible engagement of the agriculture community on this issue.”

Other presentations looked at current research on nutrient reduction strategies in Iowa including improvement of local water quality, watersheds, landscape design, modeling and monitoring, and the water implications of biofuels production in Iowa.

we will not get anywhere near where we need to be.”

The Leopold Center is working on more detailed recommendations, to be available by February. Presentations and other resources appear on the conference web site, www.flood.leopold.iastate.edu/resources.

q&a

A conversation with Director Jerry DeWitt

Q. Why was the Learning from the Floods of 2008 workshop important?



Unbelievable. This was, in one word, my reaction to seeing an Iowa landscape ravaged by floodwaters early last summer. The incredible sadness I felt, however, has been partially replaced by a measure of optimism and hope – for the land, for Iowa’s farmers and for our rural and urban communities.

The Leopold Center and the Center for Energy and Environmental Education at the University of Northern Iowa hosted a one-day workshop in December, Learning from the Floods of 2008: Practical Strategies for Resilience. The purpose was to discuss what happened, glean a few lessons, and formulate actions that might help mitigate the impact of similar future disasters.

But it was much more than that.

We heard from farmers, scientists, planners, city and county officials, conservationists, lawmakers and many others. Our common theme was the flood – what exactly happened and why, what could we do differently, how severe will the next flood be?

A spirit of renewal, resilience

From those many voices I sensed a spirit of renewal and resilience. More importantly, I heard a sincere recognition of the need to make meaningful changes on the Iowa landscape. We could have come out of this workshop feeling that we were divided, ill-equipped and unable to accomplish much, but I came away feeling quite the opposite. I think that maybe we do have some viable answers and most of all, people from

many walks of life are willing to step up to protect the landscape, our farms and our communities.

We discussed numerous strategies already in our toolbox: better monitoring of our river systems, the need to plan with entire watersheds in mind, updating flood plain maps and restricting the types of development that can or should be allowed. On agricultural lands, we know that improving the soil and its ability to handle water, maintaining conservation structures such as grassed waterways and terraces, and increasing diversity in our farming systems are practical and workable actions for today.

Recognition of need for change

At this workshop, city officials, those who manage our rivers, and people who farm recognized the need to improve management and decision-making as they relate to watersheds and landscapes. I sensed an agreement and acknowledgment that we can’t afford another massive flood, we need to do a better job both in how we use the land and how we work with each other across agency and organizational boundaries.

There also was a recognition that this was not going to be easy because we have some well entrenched patterns and attitudes about land use and practices that are going to be difficult to change. What took place at the workshop was a needed first step – deciding that we can and should change. We had a thoughtful dialogue, understanding that solutions will require changes in policies, numerous new partners, community involvement and, of course, funds to support these activities.

At the Leopold Center, we speak first for men and women on the land. The cost of change cannot be borne solely by those individuals. It’s going to take more than an act of the Iowa General Assembly; it will require city councils, neighborhoods, farm organizations, our federal partners and concerned citizens working together toward a shared public will and vision, as opposed to doing your own thing to meet your own needs for the short term.

Three steps forward

So where do we go next? One, we need to sustain this enthusiasm. Typically, we get excited about the leaky roof when it’s raining. We need to maintain the momentum for change when we’re not bailing out water or filling sandbags.

Another step is to broaden the community of voices. I’m sure we’ve only heard from some of the people who need to be part of the discussion.

Third, we need to work toward an overall vision and plan for change. It might be easy to say that we simply need more money for grassed waterways, to build the levees two feet higher, or to raise building foundations in flood plains, but that doesn’t truly reflect the big picture. Although discussions at our workshop pointed to parts of a vision for change, we need more than that.

I remember seeing how the relentless rains, wind and rivers of water gouged and left scars on the Iowa landscape. Water is a powerful force but so is the human spirit. At our workshop, I saw reason for optimism and hope, the same kind of resilience we want for our land.

We have the knowledge to do better. We must do better. And together I believe we will do better.



Photo by Jerry DeWitt



Steve Reinart: Grazier, preservationist, mold-breaker

NATALIE ASKREN Leopold Center Communications Student Intern

In Steve Reinart's mind, sustainable agriculture has the wrong name. He suggests a different one.

"It should be called regenerative agriculture," he said. "'Sustainable,' to me, is simply doing no additional harm, while 'regenerative' improves the soil and ecosystems."

He lives out what he preaches on his 500-acre operation with seed stock cattle and grass-finished organic beef, making this Glidden grazier fully deserving of the Spencer Award. The award was established in 2002 to honor those who have made a substantial contribution to the stability of mainstream family farms in the state.

Reinart's practices differ from most in his field: He relies on grazing and forages for his cattle's nourishment. Not alone in using this method, he regularly gets together with others who also practice holistic management, an approach to grazing that blends land use with natural processes. "We bounce ideas off each other," he said. "If I don't think something is going to meet my holistic goal, I won't use it."

Beyond raising cattle, Reinart is instrumental in the well-being of wildlife in his area and incorporates many shelterbelts, wetlands and ponds into his farming acreage. These improvements helped him qualify in 2005 for Tier III payments for the highest level of conservation practices under the Conservation Security Program.

On his farm, Reinart has some Composite and Black Angus cattle, but his focus and main operation is with Red Angus. "That's the breed I want to settle on eventually," he explained. "They're more heat tolerant and do more of the things I want them to do." He selects for breeding traits such as fertility, longevity and the ability to produce tender and marbled meat.

In the winter, duties are fewer, and much of Reinart's time is spent monitoring his grazing operation called Reinart's Prairie Reds. As a seed stock producer, he currently is preparing bulls to go to Pharo Cattle Company in Cheyenne Wells, Colorado, where they will be forage-tested. Right now, seed stock is one of Reinart's greatest sources of income.

Reinart was born in Iowa and is a 1964 graduate of Carroll Kuemper High School. The fall after his graduation, Reinart participated in a winter-quarter farm operations class at Iowa State University. The following fall, he was drafted into the Army and served in Vietnam.

In 1973, Reinart took over his father's farm. At that time, he mostly operated the conventional way. Around 1975, his uneasiness with conventional farming took hold and he began planting native grasses on his farm, seeing their benefits for wildlife and admiring the way they work as a throwback to how Iowa once was.

"I'm thinking the past forward, taking the best from the past," Reinart said. By 1981, he had transitioned the entire farm to native and cool-season grasses for grazing.

He was certified organic three years ago, which was an easy process since he had always avoided insecticides and herbicides. "I've been living the lifestyle forever, so that's why I could jump in immediately," he said.

Reinart is – and has been – busy proving himself fully deserving of the Spencer Award. He spent 19 years on the Carroll County Conservation Board. He also served 25 years on the Carroll County Soil and Water Conservation District; he was honored the Ruth Wagner Award as the state's outstanding assistant commissioner in 2006. More recently, Reinart has helped the conservation board acquire property and create Reinart's Bend conservation area along the North Raccoon River.

Reinart also is on the boards of directors for the Iowa Forage and Grassland Council and M&M Divide RC&D, and has worked on efforts to establish a community market in Carroll. He has been a long-time member of Practical Farmers of Iowa, which Reinart touts as a group of people whose mindsets are close to his own.

For the future, he hopes to keep on track with what he is currently doing. He also wants to consider the time when another person will take over his operation and how he can help them to keep it on the path he has set. And for other farmers, Reinart would



"'Sustainable,' to me, is simply doing no additional harm, while 'regenerative' improves the soil and ecosystems."

like to see their agricultural practices become grass-based.

"To me, that's the only true sustainable agriculture that there is," he said.

Speaking of the future of holistic grazing and grazing clusters throughout Iowa, Reinart is hopeful. "There's still a lot of new stuff coming out. That's the beauty of it. We're learning and we're using our minds."

Reinart believes that sustainable agriculture should be an integral part of the way farmers think, that no one should have to receive an award as encouragement to carry out what he and others are practicing.

"We're so blessed to be able to do these things and work with the land," he said.

He also places high importance on ingenuity and individuality. "When everyone else was raising crops in corn and bean country, I was seeding everything to grass. There wasn't a whole lot of this out there," he said. "You pretty well just have to break your own mold."



Steve Reinart of Glidden manages 500 acres for grazing. He is the 2008 recipient of the Spencer Award for Sustainable Agriculture.



TOWARD A SUSTAINABLE

Future

On the propagation of bad ideas

There is an ecology of bad ideas, just as there is an ecology of weeds, and it is characteristic of the system that basic error propagates itself. When you have an effective enough technology so that you can really act upon your epistemological errors and can create havoc in the world in which you live, then the errors become lethal.

— British anthropologist and author Gregory Bateson, 1969

The cacophony of crises to which we have been subjected recently has given new meaning to the term sustainability as it relates to our food and agriculture enterprises. Just a few short months ago, farmers were planning their next season on the assumption that they would be selling corn for \$7 a bushel and that the increasing demand for corn might push prices even higher. So landowners began increasing rental rates, equipment and fertilizer prices spiraled upward, and seed became more expensive – all of which began to eat into the projected “gravy train” – the “golden era” many had predicted for farmers.

All of these developments left farmers with more expenses and greater risks. In a September 2007 presentation at Grinnell College, Ohio State University ag economist Carl Zulauf said that farmers’ current input costs (not including increased land rent) already had gone up 22 percent when compared with average input costs over a five-year period from 2001 to 2006. Farmers have absorbed these higher costs and now dry corn is selling back in the \$3 per bushel range. In the Northern Plains where cold weather has prevented the corn from drying down in the field, farmers are harvesting corn at 25 percent moisture and local elevators are only paying \$2.20 per bushel for the wet corn. The high cost of propane to dry the corn leaves them little choice.

I doubt that anyone can argue that this scenario is “sustainable” for farmers.

Meanwhile, food prices have increased around the world, creating severe hunger problems in some regions where people spend more than 80 percent of their income on food. The result has been a “food crisis,” and in many circles farmers were being blamed for it. Farmers may be part of the problem but they are hardly the cause of it.

The underlying circumstance that often leads to such crises was explained by noted British anthropologist in a paper that he presented at a conference in 1969. In his paper, “Pathologies of Epistemology,” he argued that we can never know anything absolutely – that we always harbor many false propositions, which can be false even when they seem to work and we all share them. Accordingly, we easily can become committed to such false propositions and find it very hard to let go of them.

Bateson further observed that when such false propositions are combined with powerful technologies, the result sometimes can lead to “lethal” errors. These observations are particularly relevant to understanding the core cause of our current crises.

The central propositions that have guided our thinking for several centuries are that:

- humans are separate from nature;
- we are in a struggle against nature and must therefore invent technologies that enable us to exercise control over nature;
- maximum efficient production, short-term monetary return and unlimited growth are the most effective means by which we can accumulate wealth and ensure security; and
- the most efficient ways we can achieve those goals are through specialization, simplification and economies of scale.

While those propositions seemed rational at the time they were crafted, and they worked relatively well under certain conditions, it may be time to reexamine them for potential systemic errors. The melt-down in many parts of our economic system may well be due to the fact that these propositions left us with a brittle system that is not very resilient in the face of shocks and disturbances, and that they have led us to deplete our natural resources to a point which now threatens the carrying capacity of the planet.

Consequently, it may be wise for us to follow Bateson’s advice and examine the epistemological ideas which underlay our current paradigm. We need to explore more sustainable propositions that are grounded in ecological economics, resilient production, long-term monetary returns, and a food and agriculture system that is redesigned to mimic nature and is more self-renewing and self-regulating.

If we perpetuate epistemological errors and use our powerful technologies to reinforce them, we may find that our current crises are only the beginning. And if we persist in this epistemological pathology we may create even more “havoc in the world in which [we] live.”

Julian Krackhamson

Learning from the Floods of 2008: Practical Strategies for Resilience

Workshop session summaries by
LAURA MILLER and CAROL BROWN;
Images courtesy session presenters.



A demonstration of porous asphalt that can handle runoff from a 1.5-inch rain.



Realities hit home

The Leopold Center flood conference began with a reality check. The realities of the floods of 2008, and even 1993, needed to be acknowledged and analyzed before conference attendees could move on to discuss future flood preservation measures.

The experts agreed on several facts: Iowa's watersheds have been drastically altered over the last 100 years; existing climate data and rainfall models were inadequate, making predictions difficult; even the best conservation practices may not be able to handle the high amounts of water seen in 2008. And many watersheds cross political boundaries, which results in varying approaches to how watersheds are managed during peaceful times as well as times of turmoil.

In the "flood realities" portion of the conference, presenters focused on what took place in this year's flood. Mary Skopec, supervisor of the Watershed Monitoring and Assessment Section at the Iowa Department of Natural Resources (DNR), was concerned with public safety at peak times and afterward. As flood water overwhelmed wastewater treatment plants, gathering sediment and containments as it traveled downstream, the DNR and other agencies responded to the needs of the public with information on health hazards. Communicating with local residents when traditional avenues were not available was one of the big challenges.

Jim Donley, Federal Emergency Management Agency (FEMA) operations section chief, outlined the agency's responsibilities compared to the responsibilities of the state of Iowa. FEMA's work in Iowa this year began in response to the tornados in Parkersburg and Little Sioux Boy Scout camp prior to the floods. The agency provides individual assistance for temporary housing, home repair and replacement, and encourages sustainable rebuilding outside of flood plains.

Flood prevention and watershed management is not just a natural resource issue said State Conservationist Richard Sims, who reported on the soil impacts of the flood from the Natural Resources Conservation Service (NRCS) perspective. Results from a flood damage assessment survey, sent to all 100 Soil and Water Conservation District offices, revealed what conservation measures worked on the land and what didn't.

Approximately \$40 million will be needed for repair of waterways, terraces, levees and other conservation-related structures. Sims is a firm believer, and has the supporting proof, that an on-farm systems approach to conservation works the best. A suite of practices such as grassed waterways, reduced tillage, longer crop rotations, and streambank stabilization offers the best offense.

Sims summed up the flood realities portion of the conference, "When it comes to natural resources conservation and protection, we can't always wait for the other person to take action... we have to start doing it ourselves first."

What can be done for urban areas

Wayne Petersen, urban conservationist for the Iowa Department of Agriculture and Land Stewardship, has a lot of ideas for slowing storm water runoff, factoring in water quality as well as quantity within Iowa's urban locales. As new housing and cityscapes develop, he is pushing for management practices based on infiltration. Permeable pavement for roads and parking, ways to restore soil quality and bio-retention are three areas that need to be considered when developing neighborhoods, shopping areas and parking lots.

Iowa City mayor Regenia Bailey and director of planning and community development Jeff Davidson concur. They are revisiting the areas of Iowa City that were flooded to see how they can improve and, hopefully, prevent occurrences similar to what happened in their city this summer.

All presenters agreed that developing retail or residential areas within a flood plain is not good city planning. Damage from the flood included many homes and condos in several subdivisions, buildings throughout the University of Iowa campus as well as city recreation space. Iowa City officials are working with FEMA to buy out structures within the 100-year flood plain. They also are recommending flood proofing, which includes installation of flood doors, re-mountable flood walls, alarm systems and elevating mechanical, electrical and plumbing systems in structures located in the 100-year flood plain.

Even if all new development was designed to deal with higher amounts of rainfall, Petersen is aware that older neighborhoods also need alterations to help alleviate storm water runoff. He calls it "retrofitting the built world."

There are things that can be done to lessen urban stormwater runoff including the installation of "green" streets and rain gardens, both of which have the ability to increase the landscape's capacity to hold water and shed less runoff. Green streets include permeable concrete or asphalt or pavers with underlying gravel to aid in water retention and increase water absorption. Bio-retention cells are another way to retrofit existing parking areas and similar spaces. Bio-retention cells are areas around or within parking lots or along roadsides used to intercept, infiltrate and protect water quality.

Communities could be improved in the future if the planners

and residents would consider their carbon footprint as well as their hydrological footprint, keep development out of flood plains and design for higher amounts of stormwater runoff.

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Workshop presentations, resources, recommendations on conference web site:
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The 2008 flood scoured this field down to bedrock in the Upper Iowa River valley.

Farmers share experiences, ideas

You cannot stop the rain but farming practices can go a long way in keeping rainwater – and soil – close at hand. Presenting at the Farm Systems panel were Francis Thicke, who operates a grass-based, organic dairy near Fairfield; Rick Juchems, who had 80 acres under water in Butler County; and Rick Cruse, agronomy professor and director of the Iowa Water Center.

Thicke said his farm is all grass and legumes, rotationally grazed twice daily by 75 dairy cows, a system that mimics Iowa's native prairies in building soil organic matter. The system also infiltrates more water from rainfall, evidence of which he saw last summer.

"I had about a two-inch rain in one hour and my farm soaked it up. But upstream, where the land was used mostly for row crops, the water did not soak in," he said. "The whole valley was one raging river just from that rain."

He said studies have shown that switchgrass, a perennial that returns year after year, absorbs five to seven times more rain water than annual crops. That's why grassed waterways next to crop fields are so important, he said, adding that he would like to see more cover crops used with annuals such as corn and soybeans.

Juchems farms along the Cedar River that was heavily flooded last summer. He said three newly installed terraces all held. "It's kind of a no-brainer to put a grassed waterway on your farm where it's needed, but you have to maintain it." He also recommended filter strips and grassed headlands to keep water from running up and down hills, and proper tiling underneath terraces. He has multi-year leases for the land he farms, a necessity for sustaining critical conservation practices.

He advocated no-till because it keeps nutrients in the soil and holds soil particles in place. "The ground that I saw that was no-till had the least amount of impact from the rain that fell this year," he said.

Cruse said different practices are appropriate for different parts of the landscape. The key is to see conservation as a system, rather than a single practice.

He said erosion can be reduced by strengthening soil structure with techniques such as reduced tillage, adding organic matter, or intercepting raindrop energy with living cover, grassed waterways or crop residues. However, he warned that no-till is not a replacement for grassed waterways.

Another problem is that a majority of Iowa farmland is rented rather than managed by an owner-operator, which removes the incentive for long-term conservation practices. "It comes down to the fact that farmers need to own the land they farm," Cruse said. "Those individuals who have the most to lose by making inappropriate decisions should be the ones to make the land management decisions."

How our rivers have changed

Iowa's river systems have changed, most drastically within the past several decades. And although some of those changes are scientifically predictable, Iowa's land use policies and practices have been inadequate to deal with the natural result of those changes – flooding.

Members of the River Systems panel were Keith Schilling, research geologist at the Iowa Department of Natural Resources; Iowa State University Natural Resources Ecology Management assistant professor Tom Isenhardt; and Mark Ackelson from the Iowa Natural Heritage Foundation, who worked extensively with landowners after the 1993 floods.

Their recommendations included the need to recognize that flooding is a natural occurrence, the creation of new flood plain maps, and curtailing the development in flood plains. Buy-out programs for existing structures on flood plains and permanent conservation easements are the best ways to mitigate the effects of future flooding.

Schilling said hydrologic studies of Iowa's major rivers show an overall increase in flow, particularly in base flow during April, May and June. He said increased flows could be attributed to an ongoing rise in precipitation (possibly 10 percent over 40 years, according to one study), changes in land use and land cover, and tile drainage, which adds to a stream's base flow.

"The changes we've seen in the Cedar River and across Iowa are indicative of what has been seen throughout the Upper Midwest," Schilling said. Many of these changes are caused by a change in land use, such as a sharp increase 20 years ago in production of annual crops (corn and soybean) and away from diverse systems of alfalfa and pastures that have less runoff after rainstorms. Urbanization also has contributed to "flashiness" of streams.

Isenhardt said a stream's response to increased speed and flow of water is predictable. "It's a law of physics," he said. "Anything we do to land use, to channelization that increases the amount or speed of water, we will be transporting more sediment in the stream and add to stream meandering."

He said one study showed that about 3,000 miles of Iowa streams were lost during the 1970s due to large channelization projects, which also reduced in-stream reservoirs for water. Most streams naturally flood every year to two years as a way to dissipate energy.

Ackelson has seen those changes – and their impacts on landowners in the flood plain – first-hand. "There are farmers who have no farm left, the land has been scoured down to bedrock and others whose soil went to the next farm below them."

He said more funding is needed for conservation easements and buyouts in flood plains. He cited the cases of 654 Iowans who own 62,000 acres of flood-damaged farmland and have applied for a government program to set up permanent easements on their property following the 2008 flooding. He said Iowa will receive \$21 million, enough to provide easements for only 26 landowners or about 4,700 acres.

In addition to active flood mitigation and buyout programs, Ackelson said he would like to see conservation compliance enforced for those who receive state tax credits for agricultural land and federal farm support payments. "I contend that no conservation, no dollars. We should expect that of everyone, urban and rural. New development in urban areas should not get tax abatements. We shouldn't tolerate them not looking out for our water, flood damage and our environment," he said.

Agriculture, arts joined through 'Farmscape' play, campus group

By MIKE FERLAZZO ISU News Service

Mary Swander admits that agriculture and the arts don't seem to have much in common. Yet the Iowa State University Distinguished Professor of English has found some similarities between the two – so many that she's leading an effort to join them together in a new play and related campus group.

An award-winning author, Swander and her English 557: Writing about Environmental Issues class studied the plight of the contemporary Iowa farmer for a class project last fall. Through their research and interviews with current Iowa farmers, they authored a play titled "Farmscape: Documenting the Changing Rural Environment," which was debuted on campus last February.

Because of the play's message, the Leopold Center for Sustainable Agriculture provided Swander grant money to have "Farmscape" performed outside of campus. She is currently booking dates with other colleges, universities and small community theaters around the state.

Upon learning about the interest in the play, Leopold Center Distinguished Fellow Fred Kirschenmann also suggested creating a campus group that explores agriculture and the arts more formally. He and Swander drew 40 members to their initial organizational meeting this summer. The group, which is now called Agarts, continues to grow and hosted a performance of the play at an Ames coffee house in November, and a celebration of local foods on January 16 at the Unitarian Universalist Church in Ames.

Swander says that her students studied docu-dramas – non-fictional plays based on real events – while developing their play. The students researched local environmental problems and arrived upon the changing farmscape as a topic for their own docu-drama. They then interviewed people involved with the changing farmscape across Iowa – shaping their words into dramatic monologues.

"We did interviews and monologues, and then we chopped up the monologues to make a dialogue. There are 10 actors in the play," Swander said. "It creates a chorus of voices – the sort of David and Goliath situation that's out there right now with small farms and large corporate interests. The whole thing works on irony to create tension, reflecting how farmers look at the current situation differently."

The play is a reader's theater production, with people from local theatre groups reading the character's roles with the aid of some minimal costuming. Among the characters are an agribusiness farmer with 1,700 acres, a woman farmer with two acres of organic vegetables, a man who gave up row cropping and started a winery, a man who lost his farm in the farm crisis and eventually earned a Ph.D., a researcher from Monsanto who is developing genetically modified crops, and a couple on a century farm who started a hog confinement operation to save their farm.

"The main character is a farmer who's lost his farm, so the context for the play is an auction as he sells off his property," Swander said. "And the Mayor of Gilbert took on that role when it was performed at an arts festival in Gilbert. He did a wonderful job and at the end he said, 'You know, that really hit home because I did lose my farm personally and then I went into public service.' So it can't help but touch chords if you've been living in this state for any amount of time."

Swander is currently scheduling the production's tour, which included a stop at Dordt College in November. Other dates will be January 31 at Grinnell College, March 7 at the University of Northern Iowa, March 22 in Coon Rapids, April 2 at Clinton Community College, and May 9 during the Adel Book Festival. Because of the play's relationship to the plight of the Iowa farmer, the Leopold Center will be sending a staff member to lead a discussion following each performance.

People from all over the country have contacted Swander about joining the Agarts group, which is open to the public. She says that the group is now conducting bi-monthly meetings built around related agricultural and artistic topics.

"We had a meeting a couple of weeks ago, and Fred (Kirschenmann) kept saying, 'Think about ways that the arts can represent, or dramatize, or put forth the current issues in agriculture,'" Swander said. "And you know, I've been a writer forever and have done tons of readings and plays and dramatic events, and everybody I approach about this 'Farmscape' play says they're interested in it. I think that's because it's a grassroots production and poses some of the questions we're wrestling with ourselves."

Swander has future plans to have the play performed throughout the country and in Europe.

Mike and Stephanie Hanson from Perry were two of the subjects interviewed for a new play "Farmscape," which was authored by ISU English professor Mary Swander and her creative writing class. "Mike" is one of the characters in the play, and this photo is projected as a background image during the show.



Food and Health Core Issue: Local food comes of age

By RICH PIROG Associate Director

EDITOR'S NOTE: Food and Health is one of six core issues that help guide the work of the Leopold Center and clarify our role and response in critical areas. The Center staff member best suited to write about this topic is Rich Pirog, who leads the Center's Marketing and Food Systems Initiative and has overseen an investment of about \$2 million in more than 100 food system-related projects since 2001.

My 18-year journey at the Leopold Center has tracked many changes in our food system. In the early 1990s, the Center focused primarily on agricultural production and the health of the land. When we convened workshops with our Iowa partners, we gave little thought to where the food we were serving came from or how it was grown. The systems thinking and approaches we took were focused on the farm operation and not well connected to the people in Des Moines, Denver or Denmark who were eating the food our farmers produced.

The local food movement that began in the late 1980s on the east and west coasts came to Iowa by the early 1990s, as farmers looked to sell directly to a number of different market venues. By 1995 we saw our first community supported agriculture enterprise; the number of farmers markets increased sharply; and more farmers knocked on the doors of restaurants, hotels and educational institutions to sell local food. The Leopold Center began serving Iowa-grown food at our events, and many of our partners began efforts to connect farmers and eaters across the state.

As we moved into the new century, our local food work evolved from building awareness via all-Iowa meals and pilot projects to funding transferrable models to increase local food commerce that would benefit and be supported by Iowa farmers, consumers and communities. We also began to compare conventional and local food systems through our work on food miles, place-based foods, farm-to-college projects and ecolabels.

The last several years have brought increased interest and demand for local foods with perceived health or environ-

mental benefits. Who would have thought 15 years ago that local foods would make the cover of *Time* magazine, or that the newly coined term locavore would be voted "word of the year" by the American Heritage dictionary? Who would have thought that national and global players in the food system such as Wal-Mart, SYSCO and Sodexo would be seeking to buy local and regional foods? Who would have thought that we would need more rather than fewer farmers to meet this demand?

The past several years also have brought heightened attention and headlines about climate change, rising rates of obesity and type II diabetes in children and adults, and concern about the safety and sources of our food. These issues, along with a shaky economy, have Americans watching their pocketbooks, yet paying more attention to the impacts their food choices have on their health and that of the planet.

This attention has brought many questions about local foods to the public forefront. Do these foods have positive economic benefits for farmers and local communities? Do these foods provide health benefits when they are incorporated into a balanced diet? Are food safety, security and environmental benefits associated with increasing purchases of these foods?

Preliminary research by Iowa State University scientists has shown clear local economic and community benefits to increased local foods commerce. In 2006 the Leopold Center asked ISU researcher Dave Swenson to examine the economic impact in Iowa if residents were to eat five daily servings of fruits and vegetables that were supplied for three months of the year by Iowa farms. According to his report, the "five-a-day" scenario would sustain (either

directly or indirectly) \$331.2 million in total economic output, \$123.3 million in total labor income and 4,484 total jobs in Iowa. Compared with existing production, its net impact would be \$302.4 million in total new industrial output, \$112.6 million in labor income and 4,094 jobs.

Many questions remain unanswered, however, as to the health, food safety, and environmental benefits of these foods. There are few available research studies that shed adequate light on these issues. The Leopold Center must play a pivotal role in conducting research and convening experts on the health, safety and environmental impacts these foods play in our lives and world.

Recent Italian research in the *European Journal of Clinical Nutrition* suggests that Italians eating a well-balanced omnivorous diet will improve their personal health and reduce environmental impact compared to their current diet. Such research suggests a link that Aldo Leopold often implied in his writings; namely, the intrinsic connection between health of the land and health of the biotic community.

But the Center cannot stop there. A more sustainable food system must account for its social and environmental costs, and have healthy, nutritious products available to everyone. The Kellogg Foundation and the Wallace Center for Sustainable Agriculture suggest a food system that provides healthy, green, fair and affordable food to all.

The Center must reach beyond the laudable goals of natural resource protection and farmer profitability to examine realistic scenarios in which healthy foods are produced and supplied in a manner where everyone involved in its production, processing, packaging, transport and consumption is treated fairly. The food must be available and affordable to all cultures and walks of life, not just those of us who have adequate disposable incomes to enjoy the bounty of foods available.

Is this a pipe dream? We at the Leopold Center don't think so. As Wendell Berry said in his poem *Work Song*, part 2: *A Vision*, "this is no paradisaic dream. Its hardship is its possibility."

Look for the Center to work hard to make this dream a reality.

 www.leopold.iastate.edu

Read more about the Leopold Center's core issues:
www.leopold.iastate.edu/about/core.html



Rich Pirog is program leader for the Marketing and Food Systems Initiative. He also directs the Value Chain Partnerships project and its Regional Food Systems Working Group. He was education director at the Center from 1990 to 2000 and holds a partial appointment with ISU Extension. He is a board member of the National Good Food Network and the Iowa Farm to School Council. He has a master's degree in agricultural meteorology from the University of Missouri and an undergraduate degree in earth science from Kean College in New Jersey.

New tool estimates markets for 204 food products nationwide

How many gallons of cranberry juice are needed in Connecticut? What's the frozen asparagus market in Alaska? Answers to these and many more questions are just a click away, thanks to a new tool developed by the Leopold Center and the Iowa State University Center for Transportation Research and Education.

The U.S. Food Market Estimator provides approximate markets for more than 200 food products for every county and state in the United States. Products include milk, cheese and dairy foods; fresh, frozen or canned fruits and vegetables; grains; and meat, fish and nuts.

The on-line tool is designed to help farmers, agricultural organizations, public agencies and local food and economic groups get a "first look" at potential markets.

The tool does not show actual consumption, nor does it account for seasonal or geographic differences in market demand for various foods. Instead, the tool uses information from the USDA Economic Research Service's Food Availability Data System, an annual estimate of the amounts of 204 food products available at a per capita rate in the United States. This per capita rate is combined with the 2007 county population estimates (from the U.S. Census) to determine a potential market for

each food product at the county level.

Rich Pirog, who directs the Center's Marketing and Food Systems Initiative, said the tool might be used by farmers and other direct-market food producers to identify approximate market size in nearby counties or states when they make decisions about marketing, capacity and potential expansion. Government agencies and researchers might find the tool helpful in determining approximate food market size and impact of food production/processing on roads and other infrastructure, or for assessing economic impacts related to changes in food availability, diet and

marketing. Possible scenarios might include selecting local purchasing targets for schools, retail, foodservice or other food markets at the county, state or national levels.

Pirog advises users to carefully read the instructions and view a demonstration before using the tool.



News & Notes

Leopold Center Distinguished Fellow Fred Kirschenmann has received the first-ever Medal for Distinguished Leadership in Sustainable Agriculture from the Glynwood Center of Cold Spring, New York. The center operates a 225-acre farm in New York's Hudson Valley and works with communities to address change related to local culture and natural resources. Kirschenmann received the award in November as part of the Glynwood Center's sixth annual Harvest Awards celebration.

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World Book Publishing invited Leopold Center Associate Director Rich Pirog to write an article for its 2009 *Science Yearbook*. Pirog's five-page report, "Local Foods: Farm fresh and environmentally friendly," appears in the consumer science section of World Book's annual information supplement. Pirog discusses the U.S. food marketing system and impetus for the local food movement in the article.

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The Iowa Forage and Grassland Council recognized the Leopold Center for its work in forages and grassland agriculture in Iowa at its recent annual meeting. The Leopold Center provided initial funds for the Southern Iowa Forage and Livestock Committee to set up the CRP Demonstration Farm in Adams County. The award notes that the Leopold Center "is a leader and has helped make a difference in the livestock and forage industry in Iowa."

In the 10-year period from 1998 through 2007, the Local Food Project at the University of Northern Iowa raised \$353,200 to do its local food work. In that same period, institutional buyers who worked with the project spent about \$5,155,000 on local food. Every dollar invested in the project resulted in \$14.60 in sales to local and regional food and farm businesses. The Leopold Center provided approximately 63 percent of the group's funding, which was leveraged to attract additional investments in this work. The Local Food Project is now part of the Northern Iowa Food and Farm Partnership serving Black Hawk and surrounding counties.

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The Iowa Learning Farm has produced five new videos available on DVD. The series, "A Culture of Conservation," is intended to rekindle viewers' respect, love and desire to conserve Iowa's natural resources. Each video is approximately seven minutes in length and topics include soil, water, watersheds, the relationship of agriculture to society, and examples of stewardship. They were funded by a Soil and Water Conservation Districts Initiatives grant from the Iowa Department of Agriculture and Land Stewardship. Each county SWCD office in Iowa and all ISU Extension county offices have a copy; other groups can request a copy by contacting the Iowa Learning Farm, e-mail ilf@iastate.edu.

Quotables

"It was like a block party at my hospital. One woman wanted to know how long we would be open because she needed to drop her husband off at the emergency room and would be right back."

— California doctor Preston Maring, commenting on a farmers market set up in the lobby at the hospital where he practices. The idea has spread to 24 other hospitals in this health care system.

Listen to Maring's comments, and learn what has been happening to build the local food system in Story County, on the Leopold Center web site: www.leopold.iastate.edu/news/pastevents/maring/maring.htm

Iowa Food Cooperative launched in Des Moines shopping center

This small shop in Merle Hay Mall is open only one day a month but business is booming. Loads of food – such as home-grown potatoes, apples, honey and frozen meat – come into the store all morning long, to be assembled and re-packaged by volunteers, then stacked neatly on wire shelves and in coolers and freezers for customers to pick up during the rest of the day.

The thriving new business is the Iowa Food Cooperative, which opened November 20. Two years of groundwork for the venture was funded by a \$47,600 competitive grant from the Leopold Center's Marketing and Food Systems Initiative. The project also has received assistance from Blooming Prairie Foundation, Iowa Department of Agriculture and Land Stewardship and a natural resource-based business opportunity grant. Merle Hay Mall has donated retail space for the cooperative's first year of operation.

Here's how the coop works: Farmer-members indicate what products are available and their prices, which are posted on a web site where members also place orders. Farmers bring their products to the Des Moines mall for pick-up by members one day each month. The first month's pick-up had 44 orders totaling nearly \$3,500, which included a 10 percent handling fee for the coop.

For Ankeny farmer LaVon Griffieon, it was a 10-year dream come true.

"I am beaming from ear to ear," she said during a short ribbon-cutting ceremony. "It has been a dream of mine as a farmer to be able to drop off my product, go back to farming, and have a check sent to me in the mail. I've sold more product today than in a month's worth of farmer's markets."

Griffieon is one of 43 producers who are members of the Iowa Food Cooperative. She sells beef, chicken, turkeys, pork and eggs from her family farm directly to customers. From May through October, she also sells at farmers markets in Ankeny and Polk City.

Chris Lerch of Milo has been grazing cattle on 70 acres near Milo for the past 10 years. Although he sells his free-range beef in Indianola and Des Moines farmers markets, the Iowa Food Cooperative promises to be a good winter market for his small company.



Participants at the official ribbon-cutting ceremony included (left to right): Carolyn Ross, coop vice-president; Jason Jones, coop president; Adam Gross, representing the Iowa Governor's office; and Gary Huber, interim coop manager.

"I really think this is going to work," he said. "People are starved for good local products. We've been told to eat local and in season, and now we can finally do it."

Ken Smith is a grower for Innovative Growers of State Center and the Iowa Natural brand of low-linolenic soybean oil that has less saturated fat than other soybean oils. He said he hopes to market some of these products through the Iowa Food Cooperative, even though they are available in many Iowa grocery stores.

"This is what a group like us needs to get our story out," he said. "Once people have tried it, the product will sell itself, but this is a great avenue for us to pursue."

The IFC web currently site lists nearly 300 products, including poinsettias during the holidays, several kinds of Iowa cheese, soap and produce, which this time of year includes certified organic greenhouse tomatoes along with potatoes, onions and other root vegetables that can be stored.

"This is the first time I've sold produce in November," remarked Julie Wilbur, who has a community supported agriculture enterprise in Boone. "Usually after the farmers markets close, there's no other way to sell produce."

President of the cooperative is Jason Jones, who works with the produce and orchard operations at The Homestead facility for adults with autism near Runnells. He said the coop is a good way to connect producers with customers while offering convenience.

Gary Huber from Practical Farmers of Iowa was project manager for the Leopold Center grant, and currently serves as interim manager for the cooperative. Huber said the business is modeled after similar successful ventures in Oklahoma and Nebraska.



Left: Volunteers check in apples from the Berry Patch (owner Judy Henry in center).

Below: Potatoes waiting for pickup.

All photos courtesy Brandon Burnett, BrandonDigital.com.



"The opening of this cooperative marks a new age in Iowa farming ... and a way to use the Internet as a tool for farmers who want to make their produce available to a wider group of people." – Iowa Governor Culver in his letter of congratulations

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Iowa Food Cooperative:
www.iowafood.org



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Highlight Events



FamilyFarmed EXPO In November, a busload of ISU faculty, staff and students attended this event in Chicago, which featured workshops about urban agriculture, opportunities for farmers and businesses related to local foods, cooking demonstrations and retail success stories. The Iowa excursion was hosted by the Leopold Center and USDA's North Central Region of the Sustainable Agriculture and Research and Education (SARE) program.

2009 Shivers Memorial Lecture Sunday, March 1

Richard Levins, professor emeritus of applied economics at the University of Minnesota, will present the 2009 Shivers Memorial Lecture. The tentative title of his speech is "The Economics of Sustainable Agriculture: Beyond the Farm." The lecture, which is open to the public, will be at 7 p.m. in the Sun Room of the Iowa State University Memorial Union.

Fourth Marketing and Food Systems Initiative Workshop Monday, March 30

Mark your calendars for this workshop at the Gateway Hotel and Conference Center in Ames. Featured will be the latest findings and research in the Center's Marketing and Food Systems Initiative, as well as reporting from the five working groups in the Value Chain Partnership project led by the Leopold Center. Sessions will be scheduled from 8:30 a.m. to 4 p.m. There is no charge to attend the workshop, but reservations must be received by March 23 to guarantee a lunch ticket. Registration will be available by February 1 on the Center's web site, www.leopold.iastate.edu.