



Survey looks at links between local foods and climate change, health, food safety

A new Leopold Center report shows that American consumers are skeptical about the safety of the global food system and many believe that local foods are safer and better for their health than foods from afar.

These are the views of a representative, nationwide sample of 500 consumers who participated in a web-based survey conducted in July 2007. Their responses are summarized in a new Center report, "Consumer perceptions of the safety, health, and environmental impact of various scales and geographic origin of food supply chains."

The paper was written by Rich Pirog, who leads the Center's Marketing and

Food Systems Initiative, and Iowa State University graduate student Andy Larson. Larson is working with the Value Chain Partnerships project led by the Center while he earns an MBA with a minor in sustainable agriculture.

Objectives of the study were to gauge consumer perceptions regarding:

- Food safety,
- The impact that various scales and production methods of the food system have on greenhouse gas emissions,
- Willingness to pay for a food system that achieves a net reduction in greenhouse gas emissions and

SURVEY (continued on page 2)

Expanding the options for livestock producers

By ANNE LARSON *Special to the Leopold Center*

The pace of change in Iowa agriculture has been dizzying in the past two decades, and nowhere more than in the livestock industry. Who produces and where livestock is raised have changed the Iowa landscape dramatically, concentrating thousands of pigs in confinement buildings in a handful of counties where herds of a couple hundred hogs once were distributed throughout all 99 Iowa counties.

Thanks to work made possible by the Leopold Center, however, the rural landscape continues to offer some options for livestock producers in the form of lower cost hoop house barns, alternative farrowing practices and more profitable niche markets for pork and grass-based systems.

In the realm of beef production, new efforts are underway that keep cattle in

deep-bedded hoop barns to reduce the potential for manure runoff, addressing critical environmental concerns. Grass-based grazing and winter stockpiling of forage also have been a focus as researchers have been able to demonstrate profitable choices for raising beef. Similar opportunities exist in grass-based dairy operations.

Mark Honeyman, Iowa State University animal science professor and Research Farms coordinator, believes the Leopold Center has been a crucial catalyst in the options that have been developed for Iowa livestock producers. "None of this would have been possible with not only the funding support but also the ethical and philosophical leadership of the

LIVESTOCK (continued on page 4)

INSIDE THIS ISSUE



6



8-9

Opportunities in agriculture:
What we're hearing 3

Thinking like a community 5

Conference keynote: Setting a
bold vision for the future 6

Guest columnist: Crafting the
Groundwater Protection Act 7

More conference coverage 8-9

Can the new bioeconomy
be sustainable? 10

Two join advisory board 11

Don't miss these events
in fall Leopold Center lineup 12



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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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CONSUMERS THINK LOCAL FOODS GOOD FOR HEALTH

SURVEY (continued from page 1)

- Health benefits from local/organic foods.

Survey respondents placed high importance on food safety, freshness (harvest date), and pesticide use on fresh produce they purchase, with somewhat lower importance placed on whether the produce was locally grown, the level of greenhouse gas emissions it took to produce and transport the produce, and whether the respondent could contact the producer.

Pirog said that while 70 percent of the respondents perceived the U.S. food system to be safe, concern was raised when they were asked about the safety of fresh produce from other continents. Eighty-five percent and 88 percent of respondents, respectively, perceived local and regional food systems to be somewhat safe or very safe, compared to only 12 percent for the global food system.

Health factors also have an effect on consumer attitudes. More than two-thirds of respondents (69 percent) “somewhat” or “strongly” agreed that local food is better for their personal health than food that has traveled across the country. This is in spite of the fact that there is little or no research documenting such benefits, he noted.

Are consumers willing to pay more for food from supply chains that emit half as much greenhouse gas as conventional chains? Nearly half of respondents were willing to pay a 10 to 30 percent premium, but a similar percentage was not.

“With the dramatic rise in popularity of local foods, the farmers who grow these foods and the organizations that champion both the farmers and the foods will be called upon to prove the existence of economic, environmental and health benefits stemming from these products, and to ensure their continued safety as part of the food supply,” Pirog said.

He pointed out that the findings show a critical need for more research. “Government agencies, universities, health professionals, private companies and non-profit organizations need to work with farmers growing and processing local foods to develop an appropriate research agenda for these food supply chains,” he added.

News & Notes

The Leopold Center staff and advisory board members have reviewed 60 pre-proposals submitted in August as part of the annual selection process for 2008 research projects. Pre-proposals include 24 in Ecology, 28 in Marketing and Food Systems, and four each in Policy and the Special Call for a new grass-based livestock systems team. Competitive grants for new projects will be announced in early 2008.

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Some of the meat served in the Memorial Union and at various campus dining centers is coming from Iowa family farms, thanks to a new Iowa State University project. ISU Dining is working to bring more local, sustainable and organic foods to the campus community. The Farm to ISU program used a special Leopold Center grant to hire ISU graduate student Sue DeBlicke to set up the program in April 2007.

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Associate Director Rich Pirog is participating in a three-day international symposium at the University of California-Davis October 8-10 to develop a research program investigating energy use and greenhouse gas emissions in the U.S. food system using Life Cycle Assessment methodology. The Agricultural Sustainable Institute and Institute for Transportation Studies at UC-Davis and a major collaborator, the Bon Appetit Management Company, have selected researchers, government officials, farmers and food industry representatives to help outline the program. The group will produce a white paper, action plan and web site for resources.

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Members of the Green Lands, Blue Waters regional consortium of which the Leopold Center is a part, have written an article that appeared in the June 15 issue of *Science* magazine. The article, “Sustainable Development of the Agricultural Bioeconomy,” spells out the need for multi-functional agriculture, that is, an agriculture valued for its commodity production as well as its environmental services (e.g., clean water, carbon sequestration). Among the authors are Jeri Neal, Leopold Center Ecology Initiative leader, and former Leopold Center director Dennis Keeney.

www.leopold.iastate.edu

Consumer perceptions survey:
www.leopold.iastate.edu/pubs/staff/consumer/consumer.htm

q&a

A conversation with Director Jerry DeWitt



Q. What are the opportunities for people who want to enter agriculture?

I have been hearing a lot on this topic lately. In fact, we receive almost daily calls and e-mails asking for advice on how to get started in agriculture. Questions come not only from young people full of energy and ideas, but also from people in my own generation (and beyond) who are seeking a second career. The lure of being on the land or close to the land seems to be calling these individuals to agriculture.

I have been particularly elated that some Iowa State University students stop in to share their ideas with us and to ask for advice. They are looking for enterprises that could be integrated into existing family farm operations. It is incredibly exciting, to see younger people with new ideas for change and who want to explore the opportunities they see in Iowa agriculture. They are looking for ways to balance their dreams with real life and make their place on the farm with Mom and Dad.

I am even more inspired by what I hear from people in my own generation. These are the Moms and Dads who are willing to carve out land in an existing operation – in some cases as many as 80 acres – to allow their sons and daughters an opportunity to explore new enterprises, new activities and new hopes.

Others who bring questions to us are searching for smaller enterprises to supplement their income and keep them busy part-time on the farm. We call these individuals the “begin-again farmers.” Many of them are just like me, one generation off the farm but itching to get back into agriculture. Like me, they want to touch the soil and walk the ground each day.

At the Leopold Center, both audiences are very important in our work. New farmers and begin-again farmers offer increased value and stability to agriculture and rural communities. One brings new dreams, energy and a vision to the landscape, while the other provides experience, equity and a tangible, visible commitment.

The Leopold Center will continue to work with a set of diverse audiences. We will listen and honor their desire to sustain Iowa agriculture.

Q. What are some of the ideas you are hearing from people? What are they talking about?

These topics seem to be attracting the most interest:

1. *Grass-based agriculture.* Finishing cattle on grass especially for the organic market is increasingly popular. The lack of

slaughter facilities seems to be the stumbling block for organic growth at this time.

2. *Alternative swine production.* Two options to access specialty markets are pasture-farrowing and hoop-finisher.
3. *Direct marketing of vegetables.* This supplies the local market to CSAs and farmers markets. A number of people hope to advance the institutional food service market as well.
4. *Goats.* Some people are taking a serious look at these alternative meat products that appeal to growing ethnic markets. Marketing does not seem to be a big issue (although fencing is!).
5. *High-tunnel production.* This seems to be a popular way to extend the season for vegetable and berry production.

This is just the tip of the iceberg for current opportunities in Iowa agriculture. And the Leopold Center is committed to being a part of this invigorating, new agriculture.

More of what we're hearing

One goal for the 20th Anniversary Conference was to help set the stage for the Center's next two decades. Participants at all breakout sessions were asked: How could information from this session be used to direct future work of the Leopold Center? Here are a few comments.

Transition in ownership and operation of landowners the next 10-20 years is going to be huge – here's opportunity to look at less traditional ways that support all parties.

[Building] the potential for niche/specialty crops and markets – as well as diversifying farm products – is essential to sustainability.

There was lots of participation here from very young prospective farmers. Think about how you can reach out to these young people.

Appeal to the general public about the benefits of diversity. [We need a] resilient economy, food security, a valued landscape, [and we know that] change is coming.

Promote perennial grass-based farming.

The growing support and awareness for sustainable ag is an opportunity. The risk is in becoming comfortable with our own limited success – and the real opportunity is to keep a sense of urgency and to keep pushing the envelope'

[Youth education is a] critically important topic for “the land's” future. It must become a national priority or much of what we do won't matter to a generation that won't care.

The Leopold Center must educate “the public” about how we use the land for foods, energy and wildlife, and we must make the land resilient.

AS NICHE PORK MARKETS GROW, GROUP ADDRESSES PRODUCER CHALLENGES

LIVESTOCK (continued from page 1)

Leopold Center,” Honeyman comments. “The Leopold Center has been an incubator for turning ideas into viable alternatives in Iowa.”

Initiatives such as the original “Hoop Group,” developing alternative swine production systems in hooped structures; “Hoop Group II,” which is fine-tuning production of beef and dairy cattle in hoops; and grass-based beef cattle work done by Jim Russell and John Sellers, Jr. are just some of the products of that incubator.

Swine systems develop

In a span of 25 years – from 1978 to 2002 – Honeyman and Mike Duffy, ISU economist and former Center associate director, documented the 83 percent reduction in the number of Iowa farms raising pigs while pig numbers increased. Duffy, who often refers to swine production’s former status as “mortgage lifters,” and Honeyman have described the rapid changes in swine production over a quarter century in research appearing in numerous agricultural publications. They recount the early 1990s when industrialization of the swine industry became widespread and 1997 and 1998, when hog prices plummeted to historic lows.

Once considered a reliable and profitable mainstay of a farm operation, Iowa producers exited hog production in droves. There seemed to be few options other than entering into contract agreements with major pork corporations. In this milieu, Honeyman, Duffy, and others at Iowa State began exploring systems devised in Canada and Sweden using deep bedding and group housing of swine.

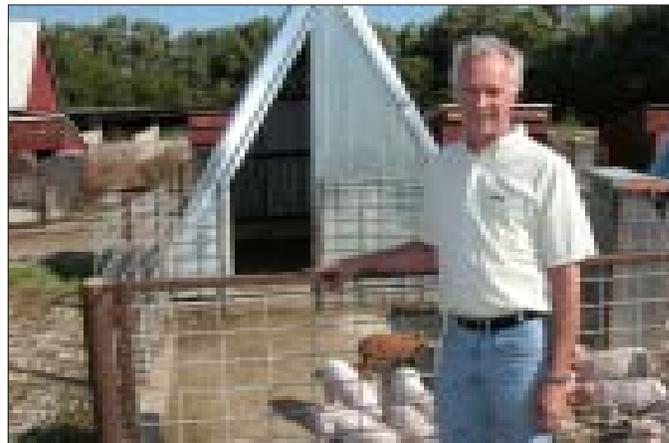
In 1997, the Leopold Center formed the “Hoop Group,” a team of researchers focused on alternative swine production systems using deep bedding. The group generated more than \$400,000 and received the ISU College of Agriculture Team Award in 2002.

Outreach in the form of conferences and publications spurred rapid adoption of the hooped barns for pig production. Honeyman says that since 1996, approximately 800 Iowa farmers have constructed more than 2,500 hoop structures for pigs, with the potential to produce 1 million hogs annually. Three conferences on alternative swine systems held in 1996, 1999 and 2004 attracted large and diverse audiences.

Use of the hoops is now gaining additional attention as major pork corporations and fast food chains have pushed for a phase-out of individual stalls for gestating sows, opting for group housing as a more humane form of most production. The Hoop Group’s research indicates that using group housing for sows is viable, in terms of both performance and economics. They found that sows in the hoop barns gave birth to more live pigs per litter than sows gestated in confinement stalls, and the group housing of gestating sows resulted in 11 percent lower weaned pig costs than that of the individual stall system. Work continues in fine-tuning alternative methods to meet gestating sow needs.

Pork finds its niche

Honeyman believes that ISU’s hoop work laid the foundation for niche pork production, which likewise has blossomed nationally with Iowa as the focal point. That’s where the Pork Niche Market Working Group (PNMWG) comes in. The group is a part of the Value Chain Partnerships project led by the Center. Coordinated by Gary Huber of Practical Farmers of Iowa (PFI), PNMWG works with more than 30 organizations and agencies and serves as a forum for exchanging information and sponsoring



Gary Huber has helped niche producers meet market challenges as leader of the Pork Niche Marketing Working Group.

research projects addressing challenges in niche pork supply chains.

Niche markets in the pork industry can be characterized by unique qualities such as breed specific attributes (e.g., Berkshire, Duroc and other heritage breeds); distinctive programs including no antibiotics, prohibition of animal by-products in feed, and food safety assurances through traceability programs; and those with practices such as being raised on family farms or adhering to environmentally friendly production techniques.

Huber notes that some PFI farmers were expressing interest in these systems in the mid- to late 1990s. Niman Ranch now works with more than 400 producers in Iowa and neighboring states. The U.S. pork niche market has blossomed, producing 500,000 to 750,000 pigs annually with Iowa at the center of production.

Huber says companies involved in PNMWG are still looking for producers who can meet the demand from food service and retail outlets for differentiated pork products. Huber says new information will be rolled out in coming months to provide outreach and educational opportunities for producers. “We need to be able to grow the number of farms and supply from both new and existing farmers,” he explains. “We hope that the niches may be attractive for small producers as well as those wanting to return to farming with less risk in terms of capital,” Huber adds.

Huber feels that the collaboration created by PNMWG has been very productive. “A fair amount of trust has been built between the companies involved, helping them to look at one another as potential partners rather than competitors,” he comments. Huber cites a recent case where two Iowa niche companies collaborated by sharing transportation to West Coast markets.

A study released early this year identifies areas where Iowa niche pork companies may be able to collaborate to further meet the challenges ahead. Among the top possibilities are carcass utilization, less than full-load transportation, sourcing and procurement of live hogs, market intelligence/competitor information, and coordinated market access to larger markets.

With the continued innovation of Iowa livestock producers and the support of organizations such as the Leopold Center, PFI and ISU Extension, producers have the potential to continue Iowa’s historic leadership in the livestock industry.

 www.leopold.iastate.edu

More about related efforts:
www.leopold.iastate.edu/pubs/nwl/2007/2007-3-leoletter/livestock.htm

Download new guide, *Herd Health in Alternative Swine Systems*:
www.pfi.iastate.edu/pigs.htm

Future

TOWARD A SUSTAINABLE

Thinking like a community



*Ecosystems that have not been disturbed for long periods of time (whether by humans or by natural disasters) tend to reach a state of dynamic equilibrium which ecologists call a climax phase, meaning that organisms have adapted themselves to one another in such a way as to maintain relatively constant population levels, to avoid direct competition, to keep energy flow-through to a minimum, and to recycle available energy and nutrients as completely as possible. They have formed, to use an anthropomorphic term, a community. — Richard Heinberg, *The Party's Over**

As I write this column I am a few days away from heading to my farm in North Dakota for my annual two weeks of “working vacation.” I always long for this time of year when I can actually “be there” on the farm. It is like rejoining a community I have missed.

And, as I have learned over the years, our farm truly is a “community.” The crops, animals, wildlife, native and introduced species (and the farmers) – even the soil microorganisms – form an interdependent set of relationships. Wastes from one organism become food for another, and all tend to adapt themselves to each other. From my perspective it isn’t always benign, but it is a community.

Such relationships have real value. Wendell Berry once told me that the sheep on his farm have adapted to the place (the hilly landscape and unique grasses that are native to his area) such that they would be less valuable in another landscape. To be as productive elsewhere, they would have to go through a process of adaptation that would require energy – a cost to the animals and no doubt to the farm.

Some time later I asked a retired animal scientist friend of mine if this was true. He said, “Oh yes. In fact in Scotland an animal always was considered more valuable when it was sold with the farm than when it was sold separate from the farm. When it was sold with the farm it already was adapted to the place.”

There are clues in this kind of ecological thinking that may be important for us to keep in mind as we attempt to deal with impending constraints such as peak oil, climate change, diminishing groundwater resources and other challenges. We tend to try and solve these problems by inventing novel technologies, without attending to their potential ecological consequences for the biotic community.

In past months the news media have been featuring the prominent role that “synthetic biology,” the science of rearranging an organism’s entire genetic code, can play in solving our energy crisis. (See Nicholas Wade’s column, “Genetic Engineers Who Don’t Just Tinker,” in the July 8 *New York Times*, and John Carey’s “On the Brink of Artificial Life” in the June 25 *Business Week*). Synthetic biology promises to bring us an entirely new generation of organisms that can replace the goods and services currently provided by fossil fuels.

We, of course, already have learned (sometimes painfully) that the introduction of non-native species to an ecosystem can cause major, unanticipated disruptions, and that the loss of a species can produce extensive and unanticipated desolation, both of

which can have serious economic consequences. Just ask North Dakota ranchers about the cost of invasive leafy spurge.

Having learned these lessons, ecologists like Kevin McCann now caution us that there is only one way to proceed: “If we wish to preserve an ecosystem and its component species then we are best to proceed as if each species is *sacred* . . . species removals (that is, extinction) or species additions (that is, invasions) can, and eventually will, invoke *major shifts in community structure and dynamics*” (emphasis mine). Thinking like a community is critical, and it seems that such thinking is in short supply as we attempt to deal with the challenges that confront us.

Our present ecosystems provide farmers with incredible free ecosystem services: pollinators, nitrogen-fixing organisms, predator/prey relationships that keep pests in check. Creating our imagined synthetic nature may not be a viable substitute for the nature we already have!

We still know so little about the nature we have; consequently, we could easily destroy vital ecosystem services without knowing it. Research recently conducted at McMaster University in Canada showed that plants can recognize their kin, suggesting that gardeners could inhibit root growth by placing plant siblings near each other and encourage root growth by placing strangers close to one another. (It seems that strangers compete while siblings do not.) What else are we missing because we know so little about our biotic communities?

None of this is to suggest that we humans have no role to play in disturbing nature or introducing innovations. Controlled burns can reinvigorate grasslands. Cross-breeding can revitalize plants and animals. We are part of nature and we can do our part. But we must think like a community and use ecological screens to help us decide which technologies to introduce and which to forego because they may cause major shifts in the community’s structure and dynamics. And we should do what we can to enhance the community’s capacity for self-renewal (as Leopold advised), rather than introducing novel organisms for the sole purpose of serving our own immediate needs without attending to the potential damage they could do to the health of the rest of the community.

It is unlikely that we can do well unless the community does well. We are, after all, “plain members and citizens,” as Leopold so eloquently put it.

A handwritten signature in cursive script, likely belonging to Stephen K. Schneider.

Celebration eyes Center's future challenges

By LAURA MILLER Newsletter editor

Blue skies, unseasonably cool weather and nearly 350 people helped the Leopold Center celebrate its 20th anniversary at a July 11 conference in Ames.

Setting the tone for a day full of festivities, demonstrations and discussions, keynote speaker Mark Ritchie challenged participants to more aggressively move the Leopold Center into the policy arena for its next 20 years.

"The Leopold Center has shown that we can be very, very productive and make changes that are better for people and the environment," said Ritchie, an Iowa native elected Minnesota Secretary of State in 2006. "You have shown by your presence and your actions that the status quo is not the best way, nor is it inevitable," but he added that the future will require active partnerships and a bold vision.

Ritchie said this vision will be even more important as agriculture prepares for a future affected by water shortages, climate change and depletion of fossil fuels.

"The work you have done for the last 20 years has made the planet a better place," he said. "The work that you do for the next 20 years might just decide the survival of the planet."

Ritchie, a long-time proponent for rural communities, founded the Minneapolis-based Institute for Agriculture and Trade Policy. He told conference-goers that speaking in Ames was like coming home since he grew up in Nevada and graduated from ISU in 1971.

Another speaker, Senator Tom Harkin (D-Iowa), offered congratulations via videotape. "The Leopold Center has changed the

landscape of Iowa over the past 20 years and accomplished everything we had hoped it would and more," he said. "It has shown that there needs to be no conflict between profitable farming and conservation; they can and should go hand-in-hand, just as Aldo Leopold taught us."

Lunch was served outdoors, featuring Iowa pork, chicken and dairy products, and produce from seven Iowa farms. The Onion Creek Cloggers performed on an outdoor stage, surrounded by exhibits ranging from using worms to compost household waste and an electric truck to deliver vegetables, to a biostover combine and on-farm biodiesel unit.

Paul Johnson spoke to supporters at a pre-conference event. He reflected on helping to write the Iowa Groundwater Protection Act that created the Leopold Center in 1987.

"We gave the Center Aldo Leopold's name for a reason," Johnson said. "Aldo Leopold talked about our relationship to the land, with conservation being the harmony between people and the land. That's what the Leopold Center is all about – people caring for the land and making sure that the land can still care for people."

Breakout sessions followed four "hot issue" tracks. On pages 8 and 9 are accounts from several sessions.

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Presentations, other materials:
www.leopold.iastate.edu/20th/conference.html

Mugge hosts PFI field day, discussions for Center work in coming years

Diversity is important, whether planning next year's crops or the future of agriculture. That's the message heard by more than 50 people who attended a special Practical Farmers of Iowa field day August 25 in O'Brien County. In addition to homemade cake and ice cream marking the Center's 20th anniversary, field day participants toured Paul and Karen Mugge's farm west of Sutherland in the morning, then moved to the Prairie Heritage Center for lunch and an afternoon discussion about future agricultural research needed in the area.

Paul Mugge is a longtime PFI member and outgoing chair of the Leopold Center advisory board. His current PFI on-farm research looks at fall-planted triticale and various strategies for growing organic flax. He also raises hogs and grows organic soybeans for the Japanese tofu market.

Iowa State University agronomist Lance Gibson has been working with Mugge on triticale, a cross between wheat and rye. He said he became interested in the crop because it's one way to keep living cover on the soil after other crops are harvested.

Gibson also has found that longer rotations among several different crops can help during adverse weather, such as one of the driest Junes on record in Sioux Center. "What we have learned is that it all comes back to diversity," Gibson said.

Other Center-funded projects in northwest Iowa include work with livestock producers on nutrient management and research on forage species suited to the region. More recently, the Center has collaborated with Woodbury County officials on the economic impact of increased organic acreage in the region. The field day also highlighted the unique partnerships between the Leopold Center, ISU Extension and PFI.

Dordt College agriculture professor Ron Voss also shared his experience as a member of the Center's Manure Management Team from 1990 to 1995. Voss said he recalled the Center's early research on nitrogen management, primarily the late-spring soil nitrate test developed by the late Fred Blackmer at ISU.

"I came to Iowa in 1985 at the height of the farm depression and people were asking lots of questions," Voss said. "I wanted to talk about stewardship and sustainability and it was a lonely feeling until the Leopold Center came along."

Also offering their comments were Kathleen Delate who leads the ISU organic research program; Drake University Law Center director Neil Hamilton; PFI executive director Teresa Opheim; Rob Marquess, Woodbury County; Mary Holz-Clause, ISU Extension; Dave Osterberg, University of Iowa professor; and ISU Wallace Chair for Sustainable Agriculture Matt Liebman.



Paul Mugge (right) and Lance Gibson explain their research at an August 25 field day.

Reflections on crafting the Leopold Center: Its history and future work

By DAVID OSTERBERG Guest columnist



Twenty years ago a small group of legislators sought to protect groundwater in Iowa. We identified agricultural chemicals, landfills and underground storage tanks as especially responsible for compromising groundwater supplies.

The legislation established programs and centers to address all these potential pollutants. This is how the Leopold Center for Sustainable Agriculture at ISU, the Waste Reduction Center at the University of Northern Iowa, and the Center for the Health Effects of Environmental Contamination at the University of Iowa were created.

We had ambitions and hopes for all the centers and programs. We had especially high hopes for the Leopold Center because of a small amount of research 20 years ago. In 1987, I was the new chair of the House Agriculture Committee. I used that position to inform all committee members about new issues in agriculture and farming.

I had a staff person look into how much money the pesticide industry was providing to ISU research efforts. I thought I would find that the companies dominated research. What I found was the opposite: pesticide companies directly contributed very few dollars compared to the USDA and the state through its funding of the Agricultural Experiment Station. That is why the authors of the groundwater legislation decided \$1.5 million could actually make a difference. That amount of funding could make sustainability a player.

Representative Paul Johnson put the word “sustainable” into the Center’s name. That term was pretty well known to some of us at the time, but not generally used. Some people may recall that *Our Common Future*, also known as the Brundtland Commission Report, was issued in 1987.

The online encyclopedia, Wikipedia, notes that “sustainable” development came into general usage following the 1987 publication of this report. Formerly the World Commission on Environment and Development, the Brundtland Commission was set up by the United Nations. This commission coined what was to become an often-quoted definition: sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The Leopold Center joined this stream of new thinking, along with other institutions in the public sector and some NGOs that were attempting to show a new way. ISU now has a graduate degree program in sustainable agriculture and it has the Henry A. Wallace Chair for Sustainable Agriculture.

I believe that the Center and organizations such as Practical Farmers of Iowa contributed mightily to this new direction at Iowa State and throughout the nation. Just how much the Center contributed to this thinking is hard to measure, but Iowa and the nation need institutions like this to help provide the research and to become a beacon to those who want to put their boats into this stream of sustainable knowledge and action.

Sustainable is an important term. However, when we passed the groundwater legislation, there were a number of important amendments before the bill came to its final passage, which was unanimous.

One of the most important amendments came from a Democratic representative from Sioux City who wanted to change the name of the center to the Rachel Carson Center for Organic Agriculture. He had many women legislators supporting this amendment but it failed, just barely. It was a close vote because many who wanted to

give credit to a great American woman scientist were joined by many who wanted to do damage to the new center.

Paul Johnson realized that what was in the new center’s name was very important. He assumed that to name the new center after Rachel Carson, a very well-known opponent of pesticides, and that to have “organic” in the name would have made it very difficult for the new center to get into the mainstream and move the current toward a sustainable future for agriculture.

I want to return to the 1987 report, *Our Common Future*. The U.N. committee report stated that society should make the economy use no more than was sustainable so that future generations would have as many resources available to them as we have. Twenty years later, the reality of global warming means that we must be sustainable – not because we will run out of resources such as coal and oil, but because we cannot continue to use these resources due to their pollution of the atmosphere.

The 4th Report of the International Panel on Climate Change (IPCC) being released in 2007 is a warning. Thankfully, many of our institutions are heeding the warning that the Earth is warming very quickly and that the addition of greenhouse gases such as carbon dioxide is the overwhelming cause.

As we celebrate the 20th anniversary of the Leopold Center, those who direct its mission must decide how this Center addresses global warming as part of making agriculture sustainable.

The best example of how sustainable development and global warming come together is the new coal-fired power plant that Alliant Energy has planned for Marshalltown. The company claims that much of this power is necessary to feed the expanding electrical load for corn ethanol plants. Using coal, with more carbon dioxide per BTU than any fuel, to make ethanol from corn, with more fertilizer N energy than any other crop, is not sustainable and it does not address global warming in any important way.

Thus, my question: How will the Leopold Center both address sustainability and confront global warming?



David Osterberg presented these comments at the “Sustainable Future” event August 25 at the Prairie Heritage Center. He served 12 years in the Iowa General Assembly and was one of four legislators who wrote the 1987 Iowa Groundwater Protection Act. Today he is active in renewable energy circles, and is founding director of an Iowa NGO, the Iowa Policy Project, www.iowapolicyproject.org. He is clinical associate professor of occupational and environmental health at the University of Iowa College of Public Health.

20th Anniversary Conference By the Numbers

- 87 People registered for five pre-conference tours (46 full-day; 41 half-day)
- 341 People registered for day-long conference
- 23 Conference breakout sessions (panels, presentations, fish bowl discussions)
- 16 Conference presentations, handouts on web
- 20 Exhibits at Midday Outdoor Festival
- 41 Research posters displayed at the conference
- 24 Partner displays at the conference
- 70 Downloadable Leopold Center documents on conference CD
- 13 Media outlets attending conference (including a local television station and independent filmmaker)



Upper left: Biomass tour
Lower left: Wine tour
Above: former Leopold Center director Dennis Keeney in the lunch line.

Rethinking Agriculture: Healthier Plants, Healthier Animals

Whether you choose to call it “friendly fire” or unintended consequences, the results of our actions on environmental and energy issues are not necessarily going to produce the outcomes we predicted or desired. Four discussants in this panel considered why and how this happens, and what might be done about it.

The premise of the article that sparked the session was that most of those advocating new energy technologies are not encouraging any reduction in overall energy consumption, so there is no guarantee the new technologies will be able to meet the continuing high demand for energy. (The article, *Friendly Fire*, appears at: www.resurgence.org/2006/ehrenfeld239.htm)

Lance Gibson, who grew up on a grass-based farm in northeast Iowa, and is now an ISU associate professor of agronomy, has heard about Iowa’s water problems since he was a kid. He cited the Leopold Center as the only place where he’d been able to get funding to research his ideas about what would help improve water quality. He agreed that new energy technology will not replace the stores of fossil fuel-based energy, and the consequences of ignoring that fact may be self-defeating. He worries that the public is being told things about energy that simply aren’t true; they need to be aware that existing or emerging “answers” aren’t going to fix the problems. And we have come to believe that we can’t survive without all of our “stuff.”

– Mary Adams

Policies to Move Farmers toward Ecological, Profitable Farming

Mike Duffy, ISU Extension economist, painted a less than rosy picture of the current U.S. government investment in policies and programs to improve the environment through agricultural modifications. USDA spending on conservation has declined significantly over the last decade. In 1995, conservation subsidies made up 25 percent of the USDA commodity subsidy budget, but by 2005 that percentage had shrunk to 9 percent. Iowa conservation subsidies weren’t much higher comprising only 10 percent of the total in the 2005 budget.

He posed the fundamental question: What are we trying to accomplish with our conservation policies? There are so many possible goals: Decrease water pollution, increase soil quality, improve wildlife habitat, and increase aesthetics of rural life. But it is difficult to maximize or minimize more than one goal at a time and there are always tradeoffs, or as economists prefer to say, “There’s no free lunch.”

Other possibilities for environmentally forward policies include carbon exchanges, social accounting with respect to environmental quality aspects of agricultural practices, and acknowledging positive and negative externalities related to agricultural production. Currently, not all costs (such as ecological ones) are accounted for in costs of production. As Duffy pointed out, “Some say, let the market work, but sometimes the market fails.”

– Mary Adams

Learning from Leopold’s Legacy

The three people selected to speak at the session that celebrated the Leopold Center’s namesake represented different aspects of Aldo Leopold’s life, but all spoke with the same passion and heartfelt love of the man whose writings and legacy are still being employed.

Wellington “Buddy” Huffaker is the director of Leopold Foundation in Baraboo, Wisconsin, which was founded by Aldo’s children. He works in Aldo’s surroundings, teaching visitors to the new Legacy Center and the “Shack” of Leopold’s ideas. The Leopold Foundation is trying to ensure that his ideas endure.

“We have both an ethical and moral responsibility to nature and the role of nature in human society,” remarked Huffaker. “Leopold lived on the land without spoiling it. And he was one of the best communicators of these principles.”

Huffaker reminded us that we don’t see the long-term payoff of land ethics, although the generations that come after us will. They will enjoy the trees and prairies that we have planted.

Huffaker summed up the session, “What we do is an epilogue to *A Sand County Almanac*. An ethic is not written.”

– Carol Brown



www.leopold.iastate.edu

Get a full account of these conference sessions:
www.leopold.iastate.edu/20th/conference.html



You have shown by your presence and your actions that the status quo is not the best way, nor is it inevitable. – Mark Ritchie, Minnesota Secretary of State, Leopold conference keynote speaker



Scenes from the courtyard, conference atrium



Rich Pirog (at left) provides commentary for a local food demonstration.



Rethinking Agriculture: Living Land

The land is not a machine.” Dana Jackson summed up the session, “Rethinking Agriculture for a Living Land,” in fairly simple terms. After discussion about two articles (Don’t buy local! and Where there’s muck there’s brass), the panel agreed that one size doesn’t fit all solutions to feeding and fueling our nation.

“Don’t buy local” author Richard Conniff says that buying local isn’t necessarily the best decision: some foods are best raised (or grown) in more appropriate geographic areas than others. For example, someone in California buying “local” rice supports rice that was probably grown in heavily irrigated deserts at huge environmental costs.

Laura DeCook and her husband Mike, operate a family ranch in southern Iowa, raising grass-fed cattle. She offers a compromise: give the consumer the option to buy locally. Their organic beef is in local stores next to the other beef, of which we can only speculate about its origin.

Jackson, associate director for The Land Stewardship Project in Minnesota, stated that we need to think of our local dairies, wineries, and orchards as community assets, which we generally don’t do now.

When it comes to fueling ourselves, the panel agreed that producing “bio-gas” may not be the best idea either. Jackson pointed out that we are making decisions with the expectation that we will continue with our current lifestyles. “There are other ways to think about the energy issue – to conserve energy instead of increasing production. Our landscape needs to be a ‘living landscape.’”

– Carol Brown

Healthy People and Landscapes: Iowa’s Future Food Systems

More questions and thought-provoking observations emerged after hearing Joan Dye Gussow and Angie Tagtow speak about changing Iowa’s future food systems.

Gussow, professor emerita and former chair of the Nutrition Education Program at Teachers College in Columbia University, challenged her listeners to eat more food from their region. “Scale issues are huge. What does it really cost to produce our food? We need to engage eaters to the food system. Every person should know a farmer.”

“We had bad spinach, ground beef, and scallions, but it took the pet food catastrophe to open our eyes to where our food comes from,” she pointed out. She said that diseases such as E. coli could be eliminated if cattle could be raised differently.

Tagtow, an Iowa nutrition consultant, presented her Vision for Good Food in Iowa, summing it in four words: Healthy, Green, Fair and Affordable. Her presentation highlighted Iowa’s many food contradictions.

“The food grown in Iowa does not meet human nutritional needs,” she said. “Crops are grown in Iowa –but most are not grown for direct human consumption. For example, our corn goes to feed livestock, for conversion to corn syrup, and to make ethanol.” But two-thirds of Iowans are considered obese. Tagtow observed the same federal agency that controls agricultural subsidies also controls food guidelines.

– Carol Brown

Harnessing Iowa’s Wind Energy

Bill Haman spoke to a full room in the day’s last round of breakout sessions. After a day packed with information, everyone at “Harnessing Iowa’s Wind Energy” was still engaged.

Haman manages industrial programs and the Alternate Energy Revolving Loan program at the Iowa Energy Center in Nevada.

Wind power development is in its infancy in Iowa. Technology and research are expanding. Currently we don’t know how to store wind energy so it must be used as it is generated. In addition to power storage, researchers are looking at harnessing strong wind and low wind speeds (a turbine begins to generate energy when winds reach 7 mph), turbine design and materials. The wind industry will create manufacturing jobs, vocational jobs including operators and maintenance, and new academic programs are being created to study wind energy.

Wind energy is beginning to make an impact on the agriculture industry. Farmers are erecting turbines to power their homes and facilities such as hog confinements. Now there are price incentives, financing plans, and tax credits to encourage wind power. Farmers are combining their resources to leverage better prices for their power and less money to connect transmission lines.

– Carol Brown

How can the new bioeconomy be sustainable?

By MIKE KRAPFL ISU News Service

EDITOR'S NOTE: Robert Anex and Matt Liebman presented at three sessions during the Leopold Center's 20th anniversary conference.

This spring farmers responded to the ethanol industry's demand for grain by increasing their corn acreage by 19 percent over last year, according to U.S. Department of Agriculture estimates.

What if that happens again next year?

What if farmers decide against crop rotations and plant corn on the same fields, year after year? Or, what if farmers begin growing biomass crops such as switchgrass for the production of ethanol from plant fiber?

Will soil lose fertility? Will erosion increase? Will the amount of energy needed to produce biofuels go up or down? Will farm income increase or decrease?

Will the bioeconomy be sustainable?

Robert Anex, an Iowa State associate professor of agricultural and biosystems engineering and associate director of Iowa State's Office of Biorenewables Programs, is working to answer those and other questions about the transition to an agriculture that produces biomass as well as food and fiber.

One answer is that American agriculture is likely to change.

"It may well be that the development of biomass-based crops production systems can have as profound an impact on agriculture and its environmental footprint as it does on energy security and the global climate," Anex and co-authors Andrew Heggenstaller and Matt Liebman of Iowa State's agronomy department and Lee Lynd and Mark Laser of Dartmouth College wrote in a recent paper. "Whether this is a positive impact or a negative impact will depend largely on how biomass feedstocks are produced and converted, and the extent to which these two activities are integrated."

Their paper, "Potential for Enhanced Nutrient Cycling through Coupling of Agricultural and Bioenergy Systems," was recently published online by *Crop Science*, the official publication of the Crop Science Society of America.

The paper reports that as much as 78 percent of the nitrogen fertilizer needed for crops could be recovered from an integrated biological and thermochemical process that converts switchgrass to ethanol. The study says such nutrient recovery and recycling could significantly improve the sustainability of biomass production and the amount of energy required to produce ethanol from plant fiber.

The researchers say the nutrient recovery could happen this way: Plant fiber would be converted to liquid fuels by pre-treatments and fermentation. The co-products of fermentation would be dried and heated to turn the solids into gases. The gasification would leave plant nutrients in the resulting ash and ammonia. The nutrients in both streams could be recovered and returned to the fields that produced the biomass.

And that potential for nutrient recycling means there's potential for a new kind of agriculture feeding a sustainable bioeconomy.

"By creating a large, new domestic demand for agricultural products, the advent of commercial-scale conversion of biomass into ethanol and other industrial chemicals is likely to have a strong influence on the design of agricultural systems," the researchers wrote. "The possibility of recycling nutrients from the biorefinery to the agricultural system that produces the feedstock

may allow substantial improvements in both sustainability and production efficiency."

But, sustaining biomass production is a complex system that depends on many variables such as soil type and slope, soil organic matter and the amount of biomass actually harvested.

To help farmers begin to understand how collecting biomass from their fields may affect soil fertility, erosion, energy needs, labor and the bottom line, Anex and a team of Iowa State researchers have added bioeconomy elements to I-FARM, a Web tool that helps farmers simulate and plan various changes to their operations. The free tool focuses on the upper Midwest but weather and soils data from 28 states are accessible from its database.

In one simulation, the I-FARM research team (see Winter 2006-07 newsletter, "Web-based tool expands use for biomass crops") studied the effects of harvesting corn stalks and leaves on three farms in northwest Iowa's Palo Alto County. One grain farm harvested no stover, one harvested 1,809 dry tons of stover a year and the other harvested 3,077 dry tons a year.

The simulations found the farm that harvested the most stover also needed the most fertilizer, had the most erosion and barely returned sustainable levels of organic matter to the soil. That farm also recorded the highest net farm income before taxes.

Anex's study of the sustainability of the bioeconomy is being supported, in part, by grants from the U.S. Department of Agriculture, the U.S. Department of Energy and the National Science Foundation. The Leopold Center is supporting crop systems work by Heggenstaller and Liebman, as well as continuation of the team that directs development of the I-FARM tool.

The studies are helping researchers answer some questions about the sustainability of agriculture in a bioeconomy, Anex said. But there are still lots of questions about how everything in a new agricultural system would fit together.

"Despite the promise of alternative crops and cropping systems as well as the nutrient recovery and recycling concepts examined here, there are still many questions that remain about their practical implementation," Anex and the other researchers wrote in their paper. "The issues that have been addressed here and the questions that have been raised are only a small subset of those that must be addressed if we are to usher in a new and beneficial agricultural revolution."

 www.leopold.iastate.edu
www.leopold.iastate.edu/20th/conference.html
I-FARM simulation:
<http://i-farmtools.org>



Anex examines sorghum-sudangrass, a high-yielding biomass crop that's being studied for production of cellulosic ethanol.

Two new appointments for advisory board

Two new members joined the Leopold Center advisory board in June — one new to Iowa and another who is familiar with both Iowa and the work of the Leopold Center. The University of Northern Iowa has chosen the new chair of its geography department, Patrick Pease, to fill one of its two seats on the advisory board. Pease succeeds Tom Fogarty, a UNI geography professor who spent a decade on the board. UNI's other representative is biology professor Laura Jackson, who has served on the board since 2003. Iowa Secretary of Agriculture Bill Northey appointed Maury Wills to represent the Iowa Department of Agriculture and Land Stewardship (IDALS) on the board. Wills is bureau chief of the IDALS Agricultural Diversification and Market Development Bureau.

The advisory board also elected officers for the coming year. Neil Hamilton, original 1987 board member and director of the Drake University Law Center, will be chair. UNI's Laura Jackson is vice-chair and Russell Brandes, representing the State Soil Conservation Committee, is member-at-large.

... agriculture is one of the most fundamental examples of the interaction between people and their landscapes.

— Patrick Pease



UNI appointee new to Iowa

Pease comes to Iowa from North Carolina, where he had spent 1998 to 2006 as associate professor in the East Carolina University geography department. While there, he conducted a number of research projects including a study of wind erosion in farm fields and soil erosion in the aftermath of Hurricane Floyd.

"I have a long professional interest in the interaction between people and their landscapes and agriculture is one of the most fundamental examples of that interaction," Pease said. "Most of my involvement in agriculture is from my research, which includes soil erosion, sediment transport and nutrient losses in the soil."

Pease said the Leopold Center is poised to be a leader in agriculture and agribusiness, especially as the state shapes a future that benefits all Iowans.

He earned undergraduate and master's degrees in geology from Indiana State University, and a Ph.D. in geography from Texas A&M. In addition to teaching, he has worked as a research assistant on two National Science Foundation projects, including a study of streambank erosion from the Upper Mississippi flood in 1993.

In 2003, he received the Distinguished Teaching Achievement Award from the National Council of Geographic Education. He also edited the *North Carolina Geographer* from 2000 to 2005.

He lives in Cedar Falls with his wife and two children.

I think highly of the Leopold Center as the most credible voice for sustainable agriculture.

— Maury Wills



No stranger to sustainable ag

Wills is no stranger to sustainable agriculture in Iowa. Over the past 10 years, he has helped develop the IDALS organic program and now administers organic certification throughout the state. He is past president and current board member of the National Association of State Organic Programs.

He also is familiar with the Leopold Center, attending numerous board meetings on behalf of his former supervisor (and IDALS representative on the board) Mary Jane Olney.

"I think highly of the Leopold Center as the most credible voice for sustainable agriculture," Wills said. "The Center can help agriculture stay focused on sustainability resource management and protection of life-sustaining ecosystems."

Wills, his wife and their six children own and operate a certified organic apple orchard near Adel in rural Dallas County. They own about 60 acres, planting the first trees in 1992. They have expanded their orchard business to include on-farm processing of organic apple products and agritourism activities such as U-pick pumpkins, hay rack rides, group events and tours.

A beekeeper, Wills also oversees the state's apiary registration and inspection programs for IDALS and the new Farm to School program. He is a board member of the Iowa Fruit and Vegetable Growers Association.

He has an undergraduate degree in social work from Iowa State University and a master's in counseling from Drake University.

News & Notes

Leopold Center director Jerry DeWitt has been appointed to a 17-member Task Force on Genetics for the Evangelical Lutheran Church in America (ELCA). The group has been assigned to develop a social statement that addresses significant theological, ethical, public and pastoral challenges arising from developments in genetics. The statement will be presented at the 2011 Churchwide Assembly, which meets every two years. The ELCA represents 4.8 million members in more than 10,500 congregations nationwide.

♦♦♦

Iowa State University Agronomy professor Matt Liebman assumed the Henry A. Wallace Endowed Chair for Sustainable Agriculture at ISU on July 1. The Leopold Center has funded a number of Liebman's research projects, including his current work on rotations and cropping systems for the emerging biofuel industry. Under a special arrangement, the Center also provides \$20,000 annually to the Wallace Chair for programs and research. The endowed chair was established in 1997 to promote the philosophical and practical ideas of Iowa native Henry A. Wallace, a former U.S. secretary of agriculture and U.S. vice president.

♦♦♦

The news was good for the Northeast Iowa Farm and Food Coalition (featured in the Winter 2006-07 newsletter, see "Northeast Iowa group hopes to build stronger food economy"). They are one of nine community groups nationwide selected by the W.K. Kellogg Foundation to receive a two-year, \$500,000 planning grant as part of a new food and fitness program. The Iowa group works in Winneshiek, Allamakee, Clayton and Fayette counties. Coalition members have been participating in the Leopold Center's Regional Food Systems Working Group. Their new web site is at: <http://www.iowafoodandfitness.org/>.

♦♦♦

It was mistakenly reported in the Spring 2007 issue of the *Leopold Letter* that Leopold Center advisory board member Maynard Hogberg was a native of Red Oak. He was born in Red Oak but grew up and attended school in Stanton.



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Highlight Events

October 10, 7 p.m., James Howard Kunstler, Sun Room, ISU Memorial Union, Ames

In collaboration with the Center for Energy and Environmental Education at the University of Northern Iowa, the Leopold Center is bringing best-selling author and social critic James Howard Kunstler to Iowa. He will present "The Long Emergency: The Coming Global Oil Crisis and Climate Change," based on his latest book of the same name. Kunstler is perhaps best known for *The Geography of Nowhere*, a history of suburbia and urban development in the United States. He is a regular contributor to the *New York Times* Sunday magazine and op-ed page.

Co-sponsors include the ISU Departments of English/Creative Writing, Landscape Architecture, Community and Regional Planning; Institute for Design Research and Outreach; ISU Bioethics Program; ISU College of Liberal Arts and Sciences Miller Lecture Fund; and the ISU Lectures Program funded by GSB.

October 22, 7 p.m., Keeney Distinguished Lecture, Robert Lawrence, Curtiss Auditorium, Ames

Former Leopold Center director Dennis Keeney will be honored when the Leopold Center hosts the Keeney Distinguished Lecture. Guest speaker will be Robert Lawrence, M.D., founding director of the Center for a Livable Future at the Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland. He will present, "The Agriculture-Public Health Connection." Lawrence, a medical doctor and environmental researcher, will discuss the obesity epidemic, the problems associated with antibiotic resistance, the problems of food security and the contribution of industrial agriculture to global climate change. He has written extensively on the environmental and human health problems associated with current food production practices and farm policy.

Information about each speaker, links to their work, on the web:
www.leopold.iastate.edu/news/events.htm

October 26-27, Rural Youth Summit: Revitalizing Rural America, all day, ISU Scheman Building, Ames

The Leopold Center is a planning team member for a two-day conference designed to connect young people from rural communities around the country to exchange ideas on the challenges and opportunities of living in rural areas. University students, beginning farmers, new Americans, technical college students, young professionals, high school students, entrepreneurs, rural youth advocates, and people under age 35 who dream of living in rural areas are invited to participate. Highlights include a 2008 Presidential candidate forum, presentations by and for rural youth, leadership training and youth roundtable discussions, and networking opportunities. The event is organized by the Institute for Agriculture and Trade Policy in Minneapolis. Find more information on the IATP web site, www.iatp.org, or from ISU contact Carol Williams, willico@iastate.edu, (515) 294-6735.