

# Letter

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## *Projects offer promise*

### Leopold Center guides pork niche group, reviews plans for additional hoop work

A new value chain for differentiated pork products is growing in Iowa, one link at a time. A group that grew out of a September 2001 Leopold Center-sponsored conference to explore opportunities for pork niche markets now has a name, a mission and a part-time coordinator.

The new group is the Pork Niche Market Working Group, a coalition of pork producers, processors, distributors, retailers, agency representatives and ISU faculty. Their new coordinator is Gary Huber of Practical Farmers of Iowa.

The working group has had participation from 27 organizations, including seven partners pledging more than \$40,000 to begin work. Direct support comes from the Leopold Center, the ISU Cooperative Development Center and ISU Extension's Value-Added Agriculture program, Iowa Pork Producers Association, Iowa Farmers Union, Iowa

**PORK GROUP** (continued on page 2)

### Hoops gain support

Plans are being finalized that outline additional work for the Leopold Center's "Hoop Group."

The Leopold Center's five-year-old research team will receive \$187,072 in federal funds to further development and adoption of hooped structure technology. The grant is from the U.S. Department of Agriculture Cooperative State Research Education and Extension Service (USDA-CSREES).

Work on the first four objectives will be completed in the next several

**HOOPS** (continued on page 2)

### Evaluating fish kills on Iowa streams

*EDITOR'S NOTE: What is a healthy ecosystem worth? That's what we wondered when we read how fertilizer spills on the same day last December killed thousands of fish (also amphibians, reptiles and other aquatic life) on two Iowa streams. We asked fisheries biologist James Wahl, whose job it is to investigate such incidents, how the evaluation is done in Iowa.*

**By James Wahl**  
Iowa Dept. of Natural Resources

Fish kills have received a lot of media attention recently due, in part, to the size and magnitude of several kills that occurred this past winter. Although these kills were large, there have been many more small, less publicized kills in the past. The varied causes include livestock manure, commercial fertilizer spills, wastewater discharge, and natural causes such as winterkill. But all have one thing in common: loss of fish.

Whenever a pollutant finds its way to an Iowa lake or stream, there's a good chance it will kill some fish. In fact, the observation of dead fish often is the first report our department receives. Both the environmental protection division and the fish and wildlife division in our department investigate fish kills. Environmental protection staff try to determine the cause of the kill and locate the person responsible for the spill. They also work closely

**STREAMS** (continued on page 6)

# Plans include hoop producer manual, workshop

## HOOPS *(continued from page 1)*

months. Work on the remaining objectives will occur over a longer period.

Plans include:

- A new manual that outlines practical applications and best management practices of hoop barn use for swine production;
- Development of case study fact sheets that show how hoops are being used for species other than hogs;
- A producer network and demonstration sites;
- A national workshop on hoop barn swine production;
- Initial work to evaluate hoop barns in

## New pork group eyes future partnerships

### PORK GROUP *(continued from page 1)*

Institute for Cooperatives, Practical Farmers of Iowa and the Greater Des Moines Partnership.

The working group has set three major goals:

- To help establish highly differentiated pork value chains that provide fair returns to small and midsize Iowa farmers (and that incorporate farmer ownership and control),
- To use environmentally sensitive approaches to pork production, and
- To help revitalize rural communities.

The working group will focus on markets for hogs that are raised according to humane animal husbandry practices with no animal by-products, artificial growth promotants or antibiotics. This market was chosen for its potential for new partnerships and opportunities throughout the food system. Preliminary discussions have been held with Sysco Corporation, the largest marketer and distributor of food service products in North America.

The working group's new coordinator will report to the working group's steering team, chaired by Rich Pirog of the Leopold Center. Huber will continue to co-direct PFI's Food Systems Program, a position he has held since 1998, and help launch activities of the new pork niche group. He will be housed at PFI's offices in downtown Ames, 232-5649.

- a total pork production system;
- Development of humane, medically acceptable and economically feasible protocols for using hoop barns to raise pigs that have been segregated from other pigs for welfare, medical and production reasons;
- Initial work to relate housing systems and genetics to meat quality – color, texture, and water-holding capacity of fresh pork – and to relate the interaction of genetic lines and production systems on pork quality traits;
- Investigation of how farmers who use hoops perceive animal welfare benefits and limitations of the technology.

The Leopold Center set up the multidisciplinary issue team in 1997 to investigate alternative swine production systems, including large, tent-like buildings also known as hooped structures or hoop barns.

"We're excited about the additional

support for the work," said Jeri Neal, who helped manage the Leopold Center's issue teams and now oversees a new ecology initiative at the center. "When we invested in this effort five years ago, we never could have anticipated its remarkable rate of adoption in Iowa, from almost zero to more than 2,100 structures in 2001."

The Hoop Group's proposal was supported by a number of people and organizations. Members of the Leopold Center "Hoop Group" are co-leaders Mark Honeyman, ISU research farms coordinator, and Jim Kliebenstein, ISU Department of Economics; Jay Harmon and Tom Richard, ISU Department of Agricultural and Biosystems Engineering; Brad Thacker, ISU College of Veterinary Medicine; Clare Hinrichs, ISU Department of Sociology; and Steven Lonergan, ISU Department of Animal Science.



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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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## Farmers are *not* 'insignificant'!

Chuck Suchy, who lives with his wife Linda on a small farm near Mandan, N.D., introduces us to the ordinary life and chores of a Midwest farmer in "Summer Hands." His music celebrates farming and rural life, and has brought this farmer-songwriter quite a following. He has performed at the Kennedy Center in Washington, D.C., and his songs are featured on radio stations as far away as New Zealand.

Suchy's music is a poignant reminder that farmers are not the "statistically insignificant" minority that led the U.S. Census Bureau to no longer count the number of Americans who live on farms. Neither can farmers be dismissed as a "contracted workforce" nor "the decline of small farms on the plains" touted as a "sign of success"—a characterization recently suggested by the director of a center for agricultural and rural development.

### Let's not overlook farmers

The tendency to discount farmers and their contributions goes back to the early 1900s. Farmers became expendable once we decided, as a matter of public policy, to reduce the number of people engaged in farming in order to "free people" to work in industry and service professions to improve our quality of life. That policy may have made sense during the first half of the 20th century. Today it only perpetuates the myth that if two or three farmers could produce all of the bulk commodities we need for food and fiber, it would be a sign of incredible "progress."

Our continuing, simple-minded policy of reducing the labor force required to produce bulk commodities only makes sense if that is the sole objective of agriculture. If so, the United States needs to get out of the farming business altogether. Countries with cheaper land and labor costs can produce our bulk commodities more cheaply than we can.

Over a decade ago, economists



*Summer hands get their start in the spring*

*When the farm comes to life with the work that it brings.*

*Summer hands have more work than they need*

*I hope they know of all the people they feed.*

– Lyrics to "Summer Hands"

©1987 Chuck Suchy

and the media were touting the "Popper thesis," which suggested that we return the Northern Plains to a "buffalo commons." John Gardner, former director of the Carrington Research and Extension Center in North Dakota, and his wife Julie took exception. In a letter to the editor of the *Fargo Forum*, the Gardners reminded us of more complex issues.

"Despite all the pressure to conform to this presumably progressive thinking," they wrote, "we'd like to suggest that perhaps there is an economic bias against the people who care for the land and produce the agricultural wealth ... The 'family farm' may prove more valuable than serving as a romantic image of yesteryear. It's beginning to appear that centralization, either by government or economic might, is not the best strategy to deal with either the natural world or our social and economic structures."

### Their creative potential

In February, we had the privilege of hosting an innovative Japanese farmer, Takao Furuno. Over the past 15 years he has developed a small,



Japanese farmer Takao Furuno in a field of high-yielding rice

incredibly productive farming operation in Japan. By **integrating** rice, ducks, fish, vegetables, fruit and wheat into his system, he **produces more gross income** from his six-acre-acre farm than a conventional 600-acre rice farm in Texas!

Furuno achieves this extraordinary productivity without external inputs. His rice yields are 20 to 50 percent higher than the rice yields of conventional rice farms. It is the intimacy with which he understands the ecosystem where he farms, the imagination he applies to the scale at which he farms, and the love he has for all organisms on his farm that enables him to achieve such unusual productivity. Large-scale, centralized systems, using unskilled labor, simply cannot produce the kind of care, resilience and efficiency that this Japanese farm exhibits.

### Other benefits follow

This does not mean that all farms – even in Japan – must be six acres in size to achieve unusual productivity. It does mean that farm size should be appropriate to the design of the farm, and that getting bigger does not necessarily make a farm more profitable. Getting smarter may be more important. It also demonstrates that small productive farms can support more people on the land and can therefore help to reduce the pressure of urban sprawl and help to support more vibrant rural communities—and take better care of the land.

We need to move beyond the

**DIRECTOR**

(continued on page 5)

# Who will farm the land? No easy answers

By Mike Duffy, John Baker and Adrienne Lamberti \*

Who will farm the land? Under what conditions will it be farmed? Will there be any young farmers left? These are tough questions and ones for which there are no solid answers.

To examine these and other questions about farm succession plans, the Iowa State University (ISU) Beginning Farmer Center conducted a mail survey of Iowa farmers. The survey was conducted by the Iowa Agricultural Statistics Service in the first quarter of 2000. There were 418 useable responses.

The survey is modeled on one developed by Professor Andrew Errington of the University of Plymouth in England. Errington conducted a series of surveys to examine farm succession and retirement plans in England, France and Canada. The Beginning Farmer Center also has been instrumental in helping several states conduct similar surveys.

According to the survey results, a majority of Iowa farmers have not made plans for the future of their farm businesses or for their retirements. Only 29 percent said they have identified a successor for their farm businesses.

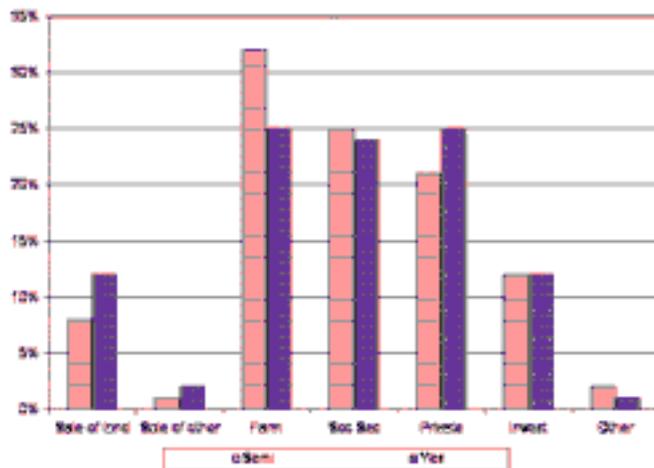
Age is not a significant factor. The average age of those with a known successor was 58, while the average age for those who have not chosen their successor was 52.

When asked about their retirement plans, slightly more than one-fourth (27 percent) said they do not expect to ever retire. Another 38 percent said they expected to semi-retire at some point and the remaining 35 percent said that they were planning to retire.

For those farmers planning to retire, 32 percent have a known successor and 36 percent do not. At the opposite end of the spectrum, among farmers who say they will never retire, 18 percent have a successor, while 31 percent do not.

Almost three-fourths of these farmers who said they

Source of income by retirement plans



\* Duffy is associate director for the Leopold Center and professor-in-charge of the Beginning Farmer Center; Baker is an attorney-at-law and administrator for the Beginning Farmer Center; and Lamberti is a graduate student at ISU.

## Iowa is losing farms, farmers

The latest report from the U.S. Department of Agriculture confirms what those who work with Iowa farmers have known for some time: Iowa is losing farms at a rapid pace, more than three times the nationwide rate.

The number of farms in Iowa dropped from 96,000 in 1999 to 93,500 in 2001, the latest period studied by the National Agricultural Statistics Service of the USDA. Iowa lost 2,500 farms, or 2.6 percent, compared to the nationwide decline of 0.7 percent. Hardest hit were midsize farms, defined as having an annual income between \$10,000 and \$99,999, whose numbers fell 2.9 percent for a loss of 1,100 farms.

Iowa also has many farmers approaching retirement, and few younger farmers getting into the business. The U.S. Census shows that in 1997, 22 percent of Iowa's farmers were over age 65 and 10 percent were under age 35. Twenty years ago, the opposite was true. Ten percent of Iowa's farmers were over age 65 in 1978, and 21 percent were under age 35.

The report does not show the distortions caused by the current definition of a farm. For almost 30 years a farm has been defined as a place that sells \$1,000 or more of agricultural products. This definition makes statistics difficult to interpret, masks the true nature of changes in farming, and limits the effectiveness of programs designed to help midsize family farms.

would retire or semi-retire, 73 percent, also said that they expect to receive 29 percent of their retirement income from the farm business. Therefore, in addition to the income necessary to support the farm business operator, the existing farm will be expected to generate almost one-third of the retired farmer's income.

Average Iowa farmers report that they plan to retire or semi-retire at age 66. The average age of farmers in the survey was 54 years old. More than half of the farmers, 52 percent, had not discussed their retirement plans with anyone. Of those who had discussed their plans, 83 percent, had discussed their plans with their families.

A study from Laval University in Canada notes; "...overemphasis on the economic aspects of farm transfer obscures the important role that human relations play in the successful transfer of family agricultural assets." Discussions with the family are critical for intergenerational transfer."

Forty-five percent of the Iowa farmers indicated they had made an estate plan. The average age for those with a plan was 58 years old while those without a plan averaged 50 years of age.

It is disturbing to see that Iowa farmers are not preparing more carefully for the future. Granted, approximately one-fourth say they will never retire, which is in a sense formulating a plan. But, as a rule, farmers do not appear to be making retirement plans in the real sense of the term.

Another aspect of farm succession is how the transfer is being conducted. Errington coined a term "succession ladder"

## FARM SUCCESSION

(continued on next page)

## Successful farm transfers involve more than identifying a successor

### FARM SUCCESSION

(continued)

to describe the gradual passage of the farm decision making to the next generation. The ladder's rungs are passing on the skills regarding technical, strategic planning, supervisory/managerial, financial, and finally, what Errington describes as "control of the purse strings." French and Canadian successors move up this ladder fairly rapidly, while British and American successors only gradually assume control of the farm.

A successful transfer involves more than simply identifying a successor. As the Laval study notes, "The process is fraught with pitfalls as young farmers seek to take their place in running the farm while owners gradually yield responsibility." Several studies have shown that there are a number of the eventual farmers who will be clearly unprepared to make decisions. Both parties must act to help integrate the young farmers as quickly as possible.

One of the issues facing farmers in developing a succession plan is how to treat all the children fairly. It is important to remember that the sibling who stays with the farm contributes sweat equity. Such an investment has to be recognized in an equitable estate plan.

Some have argued that they are not surprised at the low percentage of farms with succession plans because of the poor farm economy. However, in another study conducted during the same time period, more than 85 percent of the farmers said that if they had it to do over they would still choose farming as a career.

Farmers have worked hard to build their businesses. It is a shame to see these enterprises broken up and sold in pieces. Too many Iowa farmers shut off the combine in the fall and say they are going to retire, and then think they can have a feasible plan in place by the next planting season. It just doesn't work that way.

*For a more detailed summary and interpretation of the survey, see the Beginning Farmer Center's web site at: [www.extension.iastate.edu/bfc/pubs.html](http://www.extension.iastate.edu/bfc/pubs.html).*

*Good farming has long been a demanding craft whose reward is knowing the meaning of a changing wind, the requirements of a calf's health, or the potential of a piece of land.*

— Jedediah Purdy

*"The New Culture of Rural America" 2000*

## Value beyond monetary measure

### DIRECTOR

(continued from page 3)

point of calculating all value in terms of a money-based economy. Clean water, clean air, healthy soil, resilient landscapes, and habitat for pollinators are valuable resources that can be provided by agriculture and rural communities. Unfortunately, we still are compelled to do otherwise. Robert Costanza and his colleagues at the University of Maryland calculated that the value of free ecosystem services on the planet amounted to a conservative \$33 trillion annually—considerably more than the total gross domestic product of the global economy.

But perhaps David Ehrenfeld's comment on our need to quantify the value of these resources in such terms is the most telling. "I am afraid that I do not see much hope for a civilization so stupid that it demands a quantitative estimate of the value of its own umbilical cord," he writes.

Chuck Suchy's simple but powerful songs help us recognize the value of all the services that farmers can provide. When allowed to operate in appropriate economic climates, they provide services beyond monetary measure—care of the land, good citizenship in a local community, imaginative production systems in a local place that exceed the predictions of the most seasoned economists, and the security of knowing that nearby farms supply all the safe, nutritious and good-tasting food that we need.

These are a farmer's priceless assets, but only if we foster the kind of social and economic system that keeps farmers on the land.



*"Few things in life are inevitable. The agriculture we have depends on the choices we make today. We have at least three choices, each with dramatically different effects on Iowa agriculture."*

*"We think the current approach of putting all our resources into producing cheap, bulk commodities while keeping alive the fiction of supporting 'family' farms is the worst of the three options. It is cruel and it gives farmers false hope. It leads them to believe that if they just hang in there a little longer, things will get better."*

*"[Another] approach would be to decide that we want more than just cheap, bulk commodities from agriculture. Instead of expecting only food, feed and fiber from farming, we could broaden our expectations. Farming could be called upon to help create energy, medicines and industrial products. Most importantly, farming could be thought of as providing a service, not just a product."*

— Comments from a new Leopold Center paper, "Iowa Agriculture: Beyond 2002," written by Associate Director Mike Duffy and Director Fred Kirschenmann. Portions were published Feb. 9 as a guest editorial in the newspaper, *Iowa Farmer Today*. It is posted on the web, <http://www.leopold.iastate.edu/pubinfo/papersspeeches/iowaag.html>, or can be requested by calling the Leopold Center at (515) 294-3711.

Right: The fish kill at Lotts Creek in December 2001 is the largest on record in Iowa, Bales of hay (visible in foreground) and an earthen dam were used contain ammonia-contaminated water and keep it from reaching the east fork of the Des Moines River, about a half-mile away. Photos courtesy Iowa Department of Natural Resources.



Dead fish from the east fork of the Des Moines River.

## 2001 Fish Kills in Iowa

\*includes only incidents where a value was assessed

Date	County	Cause	Value	Location	No. of fish	Miles of stream affected
Dec. 15	Kossuth	Fertilizer spill	\$147,713.32	Lotts Creek and East Fork Des Moines River	1,295,205	49
Dec. 15	Wright	Fertilizer spill	\$13,272.65	White Fox Creek	160,007	11
Nov. 21	Black Hawk	Land-applied animal wastes	\$996.60	Poyner Creek tributary to Cedar River	6,793	3
Nov. 9	Keokuk	Land-applied animal wastes (hog)	\$1,149.63	Smith Creek	8,308	1
Sept. 30	Union	Animal wastes (unknown)	\$955.50	Four Mile Creek	10,276	1.7
Sept. 22	Winneshiek	Land-applied animal wastes (dairy)	\$1,686.84	Brockamp Creek	18,674	1.5
Sept. 20	Clay	Animal wastes (unknown)	\$1,052.98	Willow Creek	8,944	2.5
Sept. 8	Cerro Gordo	Spill	\$1,061.95	Chelsea Creek	12,612	0.7
Sept. 7	Hamilton	Animal wastes (hog)	\$1,745.64	South Fork Iowa River	20,761	1.9
Sept. 7	Hamilton	Unknown origin	\$701.58	Lyons Creek	7,230	1.1
Aug. 31	Monroe	Sewage (private)	\$91.25	Unnamed drainage ditch to Des Moines River	822	1.9
Aug. 28	Hamilton	Animal wastes (hog)	\$219.93	Bear Creek	2,451	0.3
Aug. 26	Cedar	Animal wastes (unknown)	\$392.16	Unnamed ditch and west branch Wapsinoc Creek	1,891	0.7
Aug. 14	Osceola	Animal wastes (unknown)	\$3,942.04	Otter Creek	34,646	8.2
July 24	Chickasaw	Animal wastes (hog)	\$4,816.44	Simpson Creek	32,769	4.2
April 27	Hamilton	Fertilizer spill	\$221.92	Unnamed tributary to Skunk River	1,851	5.4
April 24	Butler	Fertilizer spill	\$2,063.38	Feddeke Creek (tributary to West Fork Cedar River)	16,587	7.3

Source: Iowa Department of Natural Resources, Environmental Protection Division, Water Resources Section

### Monetary value of fish found in Iowa streams

Species	Size (inches)	Value/fish (dollars)
Carp	1-6"	.08
	11"	.27
Minnow		.08
Shiner		.08
Sucker	2"	.35
	7-12"	2.00
Cattfish	2"	.13
	14"	1.73
Bullhead	2"	.50
	5"	1.25
Northern pike	2"	.25
	9-12"	1.60
Rainbow trout	2"	.15
	15"	2.98
Largemouth bass	2"	.34
	12"	2.55
Smallmouth bass	2"	.73
	11-13"	8.00
Darter	2"	.35
Walleye	2"	.31
	15"	12.95

Source: American Fisheries Society Publication #24

## What's a healthy ecosystem worth?

### STREAMS

(continued from page 1)

with the responsible party to correct the situation and prevent further damage to the environment.

My job as a fisheries biologist is to determine the distance of the kill and estimate the number of fish lost as a result of the pollutant. My first task is to determine the starting and ending points of the kill. I do this by checking for dead fish at all bridges downstream from the source until I encounter no dead fish.

Next, I estimate number of fish that have been lost. Because the length of a kill often exceeds several miles, it is impossible to count every fish. A sampling scheme is set up that accurately reflects how many fish have died in the section of stream being analyzed. We use a systematic sample with a random start, described in guidelines set by the American Fisheries Society (AFS). These guidelines for investigating fish kills are used by fisheries agencies throughout the United States.

Subsample counts are made along 100-yard transects near bridges and also away from bridges. Several counts are made within every mile, and then expanded over the entire reach of stream impacted by the pollutant.

The monetary value set for fish is based on their replacement cost, also determined by the American Fisheries Society. AFS values represent the average cost of hatchery-raised fish. Values

### STREAMS

(continued on next page)

## Fees used to improve Iowa streams

### STREAMS

*(continued)*

are organized by region, species and size, and are derived from a survey of public, private and tribal fish hatcheries in the United States. Values vary, with small baitfish (minnows) bringing the least at 8 cents per fish, to more expensive predatory fish (game fish) that are valued at \$4 to \$8 per pound.

Because all fish found in public waters belong to the state, the Department of Natural Resources seeks restitution from the responsible party for damages in an amount equal to the cost of the fish. This is not a fine, however, an administrative penalty up to \$10,000 also can be assessed. The environmental protection division controls these penalties, which are determined by several criteria. They include degree of responsibility, such as whether the spill was from negligence or accidental; economic savings (was there a benefit to cut corners?); gravity of the violation (how extreme and severe were the

losses?); and mitigating circumstances such as extent of cooperation. All these things are considered when determining what administrative penalty should be assessed.

At this time, lost recreational value and investigation and administration costs are not being charged to the responsible party. These areas are, however, under consideration. Lost recreation would be the number of fishing trips lost to that stream as a direct result of the kill. Each trip would have a monetary value, and that figure multiplied by the estimated number of trips lost. Field investigation costs would include salaries, meals, lodging and mileage of those investigating the kill and any associated administrative costs.

We often are asked how much time fish need to repopulate a stream that has had a kill. That's a difficult question and one we don't fully understand, but we do know recovery depends on the extent of the kill and the species and size of fish involved. In general, kills

that are partial (some live fish observed) and involve small, short-lived species (minnows, shiners) have a fairly short recovery time. These streams may be repopulated within one year after a kill. On the other hand, complete kills that involve large, long-lived species (northern pike, smallmouth bass, suckers and carp) typically have a long recovery time. If adults of these species are killed, recovery could be from three to seven years, and even longer for the few fish that have reached trophy size.

A new program recently was established that should help streams impacted by fish kills. An agreement between the IDNR and the Iowa Department of Agriculture and Land Stewardship uses money collected for fish kills for environmental improvements on those streams such as installation of bank hides and other features for fish habitat. Over the past three years, nearly \$215,000 was collected from fish kills and used for stream improvements in 25 counties. Hopefully, this program will help offset some of the damage to the local environment when fish kills occur.

## Leopold Center teams tackle another water quality issue: Impact of grazing on erosion, surface runoff

Researchers at Iowa State University have completed the first year of a three-year study on the effect cattle grazing can have on water quality.

"The team working on this project is concerned about the impact of grazing on streams and water quality, but we're also interested in helping farmers find ways to continue to graze their streamside pastures," says Richard Schultz, a forestry professor and one of the principal investigators. "Present buffer programs require the removal of livestock from buffered areas. We feel other alternatives exist that will allow grazing to continue, but under more controlled conditions."

The research project is a joint effort between the agroecology and animal management issue teams of the Leopold Center and the Iowa Cattlemen's Association. It's funded by a \$550,000 grant from the Iowa Department of Natural Resources and a \$64,719 grant from the Iowa State Water Resources Research Institute (ISWRI) as part of an effort to find

ways to reduce non-point source pollution. The Leopold Center is contributing \$35,000 each year toward the project.

Research is being done in private pastures and at the ISU Rhodes Research Farm. Pasture size varies from 30 to 120 acres. Three broad grazing techniques are being studied - continuous grazing where animals are left on one pasture for most of the season, rotational grazing where animals are moved between three or four pastures during the season, and intensive rotational grazing where livestock spend just two to four days in a paddock before being moved to another.

The research consists of several parts. Surface runoff is being measured under simulated rainfall conditions and from real storms to determine the amount of erosion and phosphorus movement from the different grazing strategies.

At the Rhodes farm, the sediment trapping ability of installed buffers is being monitored. And a detailed accounting of phosphorus inputs to the

livestock and the pastures is being compared to the movement of phosphorus from the pastures in runoff.

The project also involves measuring stream bank erosion. Steel pins are installed in stream banks and measured periodically to see how much of the pin is exposed from the soil. "We believe the major source of sediment and phosphorus from grazed riparian pastures comes from stream bank erosion," Schultz says.

Schultz says it's too early to draw many conclusions. But preliminary data show the rainfall infiltration rate, and thus sediment and phosphorus flow, are highly affected by soil moisture content and the slope of the land. Grazing strategy also seems to be linked to surface runoff and phosphorus movement.

*This story was written by Susan Thompson, a communications specialist with the Iowa State University College of Agriculture. The project was featured in her weekly "Agriculture in Action" column.*

# A tale of success: From six acres to an ecosystem

*Japanese farmer uses nature as a model to increase productivity.*

A Japanese farmer who used to watch wild ducks float on his rice paddies had no idea that a similar system would be successful on his own small farm and adopted by thousands of other farmers throughout eastern Asia.

In fact, Takao Furuno's 15 years of work to experiment with and share his method of raising ducks, rice, fish and vegetables brought him to New York's World Economic Forum in February to be honored as a "social entrepreneur." The next day, he came to Ames to share his experiences with more than 200 people at two forums hosted by the Leopold Center.

"I'm not just raising ducks, I'm raising rice and ducks at the same time in the same field," explained Furuno with the assistance of interpreter David Yoshiba. "By combining two completely different things you can come up with wonderful results. Ducks and rice are just one example."

Furuno's method is called Aigamo, named after the small breed of duck he uses, a cross between a mallard drake and a domesticated species. Soon after rice is transplanted in flooded fields in June, two-week-old ducklings are added in fenced pens at a rate of about 100 ducklings per acre. The ducks eat weeds, weed seeds, insects, and other pests. Duck droppings provide plant nutrients, and their swimming activity increases rice growth.

"It's a very interesting phenomenon," he said, describing what he calls the "stimulation effect" of duck activity around the young plants that leads to stockier stems. "The ducks actually change the way the rice grows."

After rice is harvested, Furuno adds compost and plants wheat as a cover crop. He raises a variety of vegetables on each plot in the two succeeding years. He delivers vegetables, rice, duck meat, and other items, such as duck eggs and fish as they are available, to 100 families for about \$25 a week.

Furuno's farm is only three hectares (about six acres) in size. He rotates crops so that in any given year, two hectares are planted in rice, and one hectare in assorted vegetables. His rice yields are nearly twice those of farmers



**David Yoshiba (above left) translates for Takao Furuno during their visit to Ames in February.**



**Furuno and his family deliver vegetables to 100 other families. He experiences few weed problems because ducks in the rice during the previous season have eaten many of the weed seeds.**

using conventional production methods in his region of southern Japan.

Furuno has conducted more than 10 years of experiments to analyze what's been going on at his farm. With the help of local extension personnel, he measures yield, surveys insect populations so that the ducks can be introduced at the optimum time, and tests possible additions or changes. For example, before adding loaches, a small type of fish, to the paddies, he raised loaches in a tub to see if they would be eaten by the ducks. He found that the ducks, although they liked the fish, tended to ignore them in murky water.

"It's very important to look at your own work from an impartial standpoint," he said. "I use what I learn to determine my plan for the next year."

An estimated 10,000 farmers use his system in Japan, and it is being adopted in many rice-growing areas including China, India and the Philippines. During a 1994 trip to Vietnam, he saw a woman weeding a rice paddy by hand. "I knew then how important this technology would be for people in countries where much of the work still is done by hand."

Since then, he has traveled to a number of other countries to share his methods. He also has worked closely with Bill Mollison, founding director of the Permaculture Institute, to publish a book about his methods.

Furuno has farmed for 24 years, but is especially interested in learning from other farmers. Although he had never visited Iowa, he said he grew up learning about the state's agricultural productivity.

"Some of the things I'm doing have been done in Japan for 500 years," he said, adding that Iowans need to remember

their history, too. "It's important for Iowans to look at how crops used to be grown in this state to see what worked."

"Modern agriculture looks at single answers to specific problems, a very analytical approach," he said. "But this can destroy the parts of the ecosystem that have weeds and insects, the beginning of the process of a field returning to nature. Humans see their job as stopping this process."

Furuno ended his presentation with slides of an African savannah, taken before and after the land was cultivated for commodity production. The wildlife in the area dropped significantly.

"Nature is able to live with itself. These animals can live in harmony and nature gives animals the power to interact and live with one another," he said. "That principle needs to be brought back into agriculture."

*Story by Laura Miller; photos from Japan were part of Takao Furuno's presentation.*



*The Power of Duck: Integrated Rice and Duck Farming*, by Takao Furuno, was published in 2001 by Tagari Publications of the Permaculture Institute, Tasmania, Australia. It is available in the United States (in English) from the Rodale Institute Bookstore in Pennsylvania, (800) 832-6285, [rodaleinstitute.org/bookstore](http://rodaleinstitute.org/bookstore); or Seeds of Change in New Mexico, (888) 762-7333, [www.seedsofchange.com](http://www.seedsofchange.com). Cost is \$24.95.

# How far do your fruit and vegetables travel?

The fresh fruits and vegetables you buy at the grocery store probably have logged quite a few miles since they left the farm, but some items spend far less time on the road than others. That's what Leopold Center marketing and food systems coordinator Rich Pirog and ISU student Tim Van Pelt found when the two dug deeper into data they collected for the "Food, Fuel, and Freeways" report issued by the Leopold Center in June 2001.

Pirog and Van Pelt examined 1998 data (the last year data were collected) for 30 different fresh produce items arriving by truck at the Chicago Terminal Market from across the continental United States and Mexico. They calculated a weighted average source distance that produce traveled from where it was grown to reach the Chicago market (using a formula representing both distance and weight of load transported). They found that only pumpkins and mushrooms traveled less than 500 miles to reach the

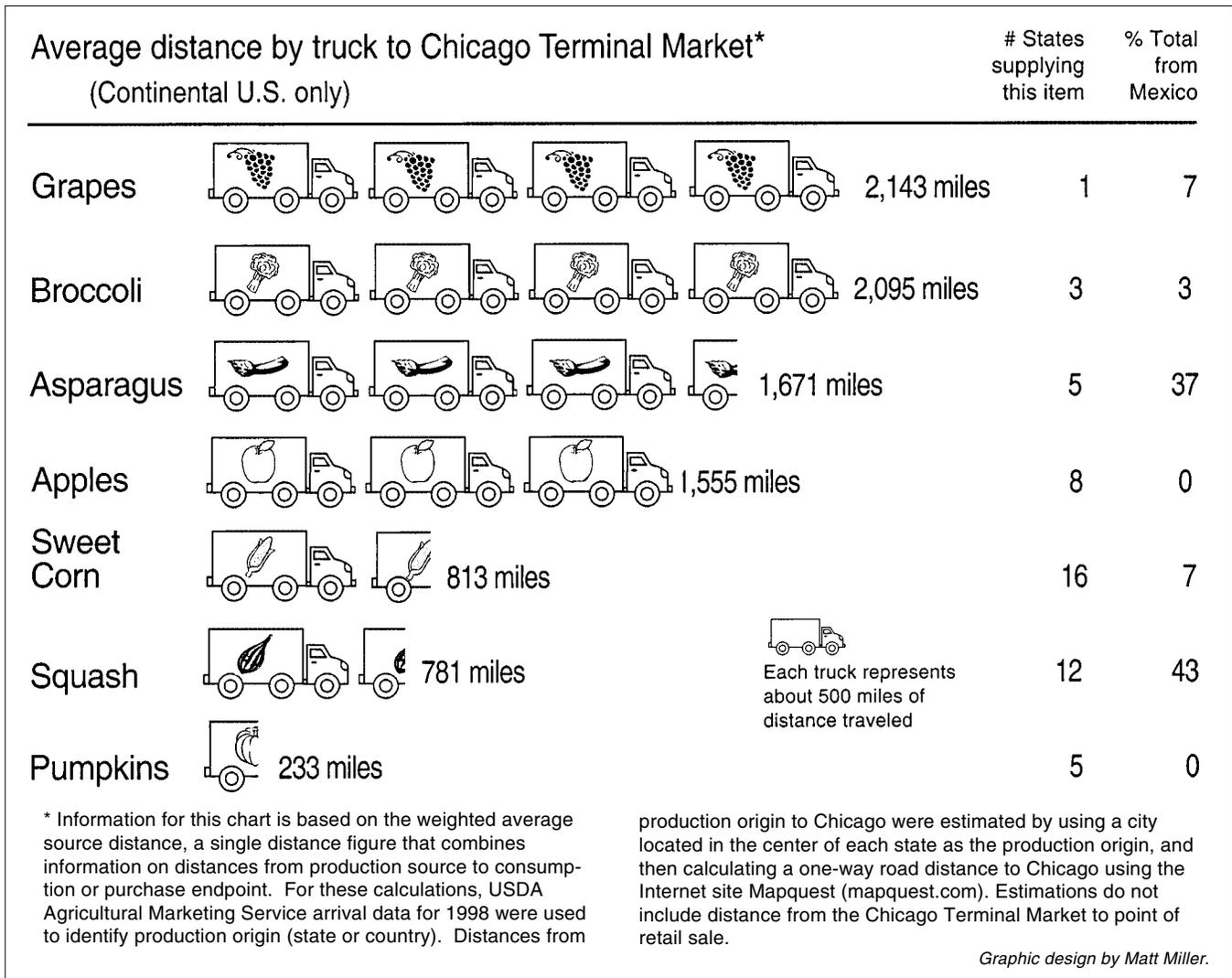
Chicago market, while six fruits and vegetables (broccoli, cauliflower, table grapes, green peas, spinach and lettuce) traveled more than 2,000 miles to reach their destination. Their figures include only distance to the Chicago Terminal; distances to retail outlets are in addition to these estimates.

Their study also showed that cabbage, cucumbers, onions, sweet corn and tomatoes originated from 15 or more states, while green peas and table grapes came

from only one state (California). Mexico was a source of 21 of the 30 produce items investigated, with more than one-third of the asparagus, cucumber, eggplant, squash and tomato arrivals originating from Mexico.

For more information on how far food travels, check out the report, "Food, Fuel, and Freeways," at the Leopold Center's web site, <http://www.leopold.iastate.edu/teams/localfoods.html>, or ask for a copy from the Leopold Center office, (515) 294-3711, or email: [leocenter@iastate.edu](mailto:leocenter@iastate.edu).

*More than one-third of the asparagus, cucumbers, eggplant, squash and tomatoes was imported from Mexico.*



*Progressive Farmer* magazine has named Leopold Center director **Fred Kirschenmann** one of its 2002 Leaders of the Year in Midwest Agriculture. The award, described in the February 2002 issue, has been given since the 1930s to people who have brought new ideas to agriculture. Kirschenmann was applauded for his efforts to carry on a national conversation about the need for a “new social contract” for agriculture. Attorney general Tom Miller received the 2001 Iowa award.

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Accomplishments of the Leopold Center’s **Agroecology Issue Team** are highlighted in a new four-color poster created by the National Resources Conservation Service in Des Moines. The poster, “Lessons Learned from Bear Creek,” outlines the top 10 benefits discovered at the riparian buffer established along Bear Creek in Story County beginning in 1990. The area, now a National Restoration Demonstration Watershed, has attracted more than \$3.14 million of federal and state funding. For more information, contact Tom Isenhardt, ISU Department of Forestry, (515) 294-8056. Visitors to the team’s web site, <http://www.buffer.forestry.iastate.edu/>, also can take a “virtual tour” of the area.

\* \* \*

The Leopold Center’s Alternative Swine Production Research Initiative, also known as the “Hoop Group,” received the top award for agricultural research done by a team at Iowa State University. The award was presented during the ISU College of Agriculture’s annual convocation on February 7. Team members include faculty and staff from the economics, animal science, sociology, agriculture and biosystems engineering, and veterinary medicine departments and three ISU research farms. They include co-leaders **Mark Honeyman** and **James Kliebenstein**, also **Jay Harmon**, **Tom Richard**, **Brad Thacker**, **Clare Hinrichs** and **Steve Lonergan**. **Donald Lay**, a member of the original team who no longer is at ISU, also was named to the award.

\* \* \*

Policy makers and educators from neighboring states are looking to the Leopold Center for leadership in sustainable agriculture issues. Director **Fred Kirschenmann** testified at a February 21 hearing in Jefferson City, Mo., where legislators are considering a proposal that would fund a research center for food and sustainable agriculture. Kirschenmann also presented keynote addresses at sustainable agriculture conferences in Springfield, Illinois, and the annual meeting of the Nebraska Sustainable Agriculture Society in Aurora.

\* \* \*

Leopold Center director **Fred Kirschenmann** presented a plenary session address, “Protecting Water Quality or Redesigning the System,” during Iowa State University’s annual water quality conference March 4-6. The conference is sponsored by the ISU College of Agriculture, ISU Extension, Iowa State Water Resources Research Institute (ISWRRI) and the Iowa Department of Natural Resources. Conference proceedings are posted on the ISWRRI web site, <http://www.water.iastate.edu>.

\* \* \*

The Leopold Center is pleased to help sponsor the second annual John Pesek Colloquium on Sustainable Agriculture March 26-27 coordinated by the Henry A. Wallace Endowed Chair for Sustainable Agriculture at Iowa State University. Highlighting the event are remarks by Per Pinstrup-Andersen, 2001 World Food Prize winner and director general of the International Food Policy Research Institute, Washington, D.C. The March 26 event is 2 p.m. at The Hotel at Gateway Center in Ames. A “town meeting” March 27 in Lewis features a 1:30 p.m. panel discussion that includes Pinstrup-Andersen, Leopold Center Advisory Board members **Dave Williams** and **Neil Hamilton**, and others. The town meeting is at the Wallace Foundation for Rural Research and Development.

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## *Leopold Center report outlines the ‘three Rs’*

A well-traveled new director, three exciting new research and development initiatives, and a dismaying round of budget cuts are highlighted in the Leopold Center’s 2000-2001 annual report, issued at the end of 2001. The document describes how the three Rs (reconfiguration, reflection and reality) shaped the Leopold Center’s activities and thinking.

The new annual report describes director Fred Kirschenmann’s very busy first year on the job as he mapped out new directions for the Center, talked with Iowans and notable sustainable agriculture leaders about their common vision for agriculture, and maintained ties with existing researchers and supporters. There are features on the conclusion of the competitive grants programs for conferences and special events and on the Center’s continuing dedicated efforts to invigorate Iowa’s local food systems.

One-third of the annual report is devoted to recapping the work of the investigators in the competitive grants program—those embarking on new projects, ongoing work, and projects that concluded at the end of the year.

The 36-page report is available by calling the Leopold Center office, (515) 294-3711, or ordered online at <http://www.leopold.iastate.edu/pubinfo/pubinfo.html>. It was compiled and edited by Mary Adams, with graphic design provided by Juls Design of Ankeny.

## **GMOs still a national topic**

The debate over genetically modified seed continues to capture national attention. A reporter for the *Chicago Tribune* saw an article in Winter 2001 *Leopold Letter* newsletter about Mike Duffy’s research on the economics of using genetically-modified seed and wrote a news story. The item was picked up by the Associated Press and carried in a number of newspapers, including *USA Today*. The article was reprinted in the *Food Traceability Report*, a weekly trade publication for the food regulation industry, and referenced in a Monsanto Corporation online newsletter.

## Finding her niche in a nest

By Laura Miller, Newsletter editor

When Cindy Madsen started raising chickens 15 years ago, she was looking for something she could do on the farm with her three growing boys. Now her youngest, a senior at Audubon High School, is leaving the nest -- and Madsen -- with a brisk business.

Madsen sells approximately 2,500 Cornish Rock broilers every year, and plans to expand her Audubon County operation this summer. Most of her sales are by order from a growing customer base developed by word-of-mouth and selling at the Des Moines Farmers Market the past several years. About two-thirds of her sales are within 30 miles of the Madsen Stock Farm, operated by Cindy and her husband Vic, about 80 miles west of Des Moines. The poultry business supplements their livestock and grain operation.

"A farm can be a dangerous place for children," Cindy recalled. "I was looking for something that would be fun and that they could help out with. We also were looking for something that didn't require a lot of expensive facilities or equipment."

Madsen has been happy to fill a niche market for "natural" poultry. Like the hogs that Vic raises in hoop houses, Cindy's chickens eat corn grown on the farm (they do not plant genetically-modified crops). They also do not use subtherapeutic antibiotics or

growth hormones in livestock feed.

The result is a product that sells for about \$1.50 per pound, compared to an average supermarket price of 89 cents. She also sells eggs from her flock of about 60 layers, also priced about 25 percent above the supermarket price.

Madsen was one of the speakers who offered advice and encouragement at a poultry niche workshop in January that was planned by the Leopold Center and Iowa State University Extension. More than 75 people from several states including Minnesota, Wisconsin and Illinois participated in the half-day program.

"Probably our most-asked question is: How do we price our chickens?" she said. "But the cost of production is a lot more than feed and processing and I think our customers understand that. I've never had anyone complain about the price. They know it takes a lot of time to raise chickens 'the old-fashioned way' like Grandma and Grandpa used to do it."

Madsen's chickens are hand-fed and watered and she cleans out buildings manually.

A good location also has contributed to her success. She is within easy driving distance of a major metropolitan area yet only 10 miles from a licensed processing facility, Hansen Poultry of Kimballton. Availability of a state-inspected facility is one of the biggest obstacles for Iowa producers.



**Producer Cindy Madsen, right, has developed a strong customer base at the Des Moines Farmers Market. Her business also has helped supplement the Madsen's livestock/grain operation.**

Another challenge is developing the market. "It takes several years to build a customer base and a lot of people underestimate the time involved," she said. "You really need to like people and you must be available when they want the product."

Madsen has a mobile food license as well as a warehouse license, which allows her to keep birds in freezers located in an enclosed shed. Taking advance orders and keeping an e-mail list of customers also has helped her business grow.

The venture has taken more time than expected, but has it fulfilled its original intent? "Oh yes," she answered quickly when asked. "I love to do it."



**Madsen sells about 2,500 broilers every year. A recent expansion will allow her to raise several hundred more.** Photo courtesy Helen Gunderson, Gunder-friend Productions

### More information for producers on the web

Information for producers and others interested in developing niche markets for poultry is now available at the Leopold Center web site, [http://www.leopold.iastate.edu/teams/poultry/poultry\\_niche.html](http://www.leopold.iastate.edu/teams/poultry/poultry_niche.html). The information was gathered for a half-day workshop in January to explore market challenges and opportunities in Iowa for organic, pasture-fed, free-range, antibiotic-free or other poultry raised with a unique story under special conditions. One of the newest resources is a 2002 publication from the USDA's Sustainable Agriculture Research and Education (SARE) program. The publication, *Profitable Poultry: Raising Birds on Pasture*, also is available online, <http://www.sare.org/bulletin/poultry>.



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# Letter

## HIGHLIGHT EVENTS

### **An urban conversation**

Why should urban and suburban dwellers care about where agriculture is headed in Iowa? That is the question the Leopold Center hopes to answer as staff look for a common ground for conversation about agricultural issues in three urban Iowa communities.

Local partners have helped the Leopold Center plan "urban conversations" in Sioux City, Des Moines and West Des Moines. The meetings are the final phase in developing future directions for the Leopold Center in its new marketing, policy and ecology initiatives.

The last forum is April 15, 7–8:30 p.m., St. Francis Of Assisi Catholic Church in West Des Moines. For information, contact Ecumenical Ministries of Iowa, (515) 255-5905, or National Catholic Rural Life Conference, (515) 270-2634.

**Nadeem Siddiqui**, director of Cornell University Dining Services in Ithaca, N.Y., will share how he uses local foods in his award-winning campus dining service at a forum on the Iowa State University campus.

Siddiqui has developed programs for diners about the importance of eating local and regional foods. He works with the Culinary Institute of America and has introduced successful new services including Tandoori cuisine and kosher foods. He previously worked with ARAMARK food service at the University of Chicago and the dining service at Iowa's Grinnell College.

A panel of ISU students, faculty and staff will discuss their views about serving local foods on campus. Also presented will be information about local food projects in Iowa, including work at the University of Northern Iowa campus by Kamyar Enshayan, the ISU Tearoom and the Scheman Building at the Iowa State Center.

Sponsored by the Leopold Center and ISU's Hotel, Restaurant, and Institution Management program with support from Drake University, the Iowa Food Policy Council, Henry A. Wallace Chair for Sustainable Agriculture at ISU, the ISU Graduate Program in Sustainable Agriculture, and the ISU Government of the Student Body.

### **From Farm to Fork**



### **A Forum on Locally Grown Foods at University Campuses**

Thursday, April 4, 1:30-3:30 p.m.  
Joan Bice Underwood Tearoom  
23 MacKay Hall, ISU  
Contact: Rich Pirog, (515) 294-1854