

Summer 2015

Leopold Letter Summer 2015

Leopold Center for Sustainable Agriculture

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Incubator farm supports refugees, business

By STEFANIE TROUT, Leopold Center Graduate Communications Assistant

Refugees from Burma, Bhutan, Rwanda and Burundi are growing produce and starting farm enterprises at the Global Greens Farm in West Des Moines.

Global Greens Farm is an urban farm that is a part of Lutheran Services in Iowa's (LSI) Global Greens Program. The farm is made possible through a land partnership with the Valley Community Center. Since 2013, LSI's Global Greens Program has helped refugees reconnect with the land by coordinating land access, production education and business development training.

"We aren't teaching them how to farm," says Farm Marketing Specialist Jess Soulis. "They already know how to grow, but there are a lot of new crops to learn, and

they have to adapt what they know about farming to Iowa's seasons."

Many refugees come from farming backgrounds and want to grow food for their families. The Global Greens Program helps find them space in community gardens, where they experience their first introduction to growing in the Midwest. Oftentimes, they choose to grow foods from their home countries that are not available in Iowa. Roselle, for example, is a species of hibiscus that is an essential part of Burmese cuisine.

Following their initial experiences in community gardens, many refugees are interested in starting small farm

INCUBATOR (continued on page 4)

Certified Graziers sustain Iowa cattle industry

By LAURA MILLER, Newsletter Editor

Managing livestock and pastures is an art. Just ask Glenn Rowe, a fourth-generation cattle producer from Lorimor who's been in the business nearly all of his life. He manages a cow herd of around 110 Black and Red Angus cows in Madison County, and is always looking for ways to improve his operation.

When Rowe had the opportunity to enroll in a 30-hour course to become a Certified Grazier two years ago, he took it. It didn't hurt that his son, Justin, had completed the course a year before, and was a graduate of another education-intensive program, Greenhorn Grazing.

"Justin is my mentor, always pointing out things that we should be trying," Glenn says. "Younger people are more willing to

make changes and see how they work."

The Certified Grazier program is an advanced course for experienced graziers offered by Iowa State University Extension and Outreach. The six-session program includes classroom instruction on vegetative and animal management, conservation planning, ways to measure pasture condition, economics and grassland management for soil quality, erosion control and fertility. Pasture walks and field tours offer plenty of time for discussions and networking with other producers.

Upon completing the course, a participant becomes a Certified Grazier, somewhat like the Master Gardener,

CERTIFIED GRAZIER (continued on page 6)

INSIDE THIS ISSUE



4



8

Director: Greening up	3
15 new research reports	2
Kirschenmann: Charting a 'collision course'	5
Leopold Center gets honors	8
What would Aldo say?	9
Putting local meat on school district menus	10
Chef envisions future of food	11
Summer field days begin!	12



The newsletter is on the web at:
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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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Research Results

On the web: www.leopold.iastate.edu/news/results
and www.leopold.iastate.edu/grants/completed

Summaries

Easy-to-read summaries are available for these recently completed projects funded by Leopold Center grants:

- Biochar and managed perennial ecosystems: Testing for synergy in ecosystem function and biodiversity
- Determining threshold responses of plant-soil feedbacks to nitrogen deposition
- Enhancing botanical composition, wildlife habitat and carbon sequestration of pastures in south central Iowa through soil disturbance by mob grazing of beef cattle
- Establishing shared-use processing facilities at three possible locations in central and south central Iowa
- Sustainable agricultural land tenure and risk management for extreme climatic events
- Capturing indigenous knowledge of small grains production
- Demonstrating farrowing alternatives for small farms: Insulated tents for sows and pigs
- Evaluating canola as an alternative oilseed crop and enhancing winter cover in Iowa
- Impacts of conventional and diversified rotation systems on crop yields, profitability, soil functions and environmental quality: Stage II
- Implementing a seasonal, cycle menu for public schools featuring Iowa-grown and processed foods
- Insurance benchmarking for Iowa fruit and vegetable producers, Year 2
- Planning grant for the establishment of a food enterprise center
- Quantifying the effects of alternative surface inlet protection strategies on water quality
- Small-farm business development incubator for refugee farmers
- Suitability of winter canola for enhancing summer annual crop rotations in Iowa

News & Notes

The Leopold Center has an interim administrative specialist, Kim Vo. She has been serving since mid-May, when Heather Scott left the Leopold Center to take another position at Iowa State University. Vo previously worked at the ISU Research Park. Reach her at kvo@iastate.edu.

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Former Leopold Center Director Jerry DeWitt was honored as a “2015 NCR-SARE Hero” by the North Central Sustainable Agriculture Research and Education program. Coordinated by the NCR-SARE Alumni Organization, this recognition honors the leadership, vision, contributions and impact that these heroes have made in the field of sustainable agriculture in the 12-state North Central region. During his 38-year tenure with ISU, DeWitt served as an associate dean, assistant extension director and Center director, 2005-2009.

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The Leopold Center has issued its Summer 2015 Request for Pre-proposals, or RFP. This is the annual call for research ideas and projects to be funded under the

Center’s long-running competitive grants program. Soil health, farming options to create a more diverse landscape, ways to increase adoption of conservation practices, beginning farmers and food hubs are of particular interest this year. The deadline for submission of concept papers is July 7. Details: www.leopold.iastate.edu/grants/rfp.

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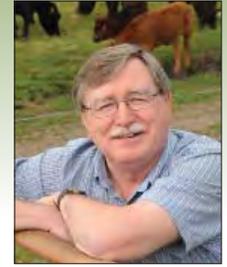
Priyanka Jayashankar, who has a split appointment with the Leopold Center and the ISU College of Business as adjunct assistant professor of Management, has been researching two topics related to local food: financial inclusion and food security. She is the lead author on a paper, “Slow money in an age of fiduciary capitalism,” published in the journal, *Ecological Economics*. She also received a College of Business Research Bootstrap Grant for a study on food deserts as well as an inter-disciplinary grant for a study on community gardening. Watch upcoming newsletters for her report on these important topics.

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Conversations

WITH DIRECTOR MARK RASMUSSEN

Greening up what we eat



Everyone has heard the saying: “You are what you eat.” We have more information than ever to validate this concept, thanks to emerging research that shows just how relevant it is – for human as well as livestock nutrition.

I want to share some research results that I (along with many other scientists) have generated. It’s a story of diet, nutrition, gut health, microbiology and antimicrobial resistance. (Granted, this is a complex topic, and I will try to condense it into a clear and concise summary.)

We’re all aware of the problem of antimicrobial resistance. Microbiologists who are investigating ways to combat antimicrobial resistance have been studying bacterial efflux pumps. These pumps are nature’s equivalent to bilge pumps in a ship. Efflux pumps offer bacteria a way to remove many problematic compounds that they might encounter in their environment. The pumps remove chemicals that can be toxic or harmful to the cell, including natural compounds like bile salts and fatty acids, as well as synthetic antibiotics. Efflux pumps appear to be especially important in regard to pathogens of the GI tract, including many of the common food safety pathogens that can harm humans and animals.

A potential strategy in combating pathogenic bacteria and antimicrobial resistance is to find ways to disrupt or block efflux pump activity and keep pathogens from using these pumps to their advantage. Just like with a bilge pump, if you stop the pump, especially in heavy seas, the ship may take on too much water and be at risk of sinking.

Part of the research to identify useful efflux pump inhibitors has focused on naturally occurring compounds found in plants we eat, which has broad implications for nutrition and diet. Results indicate that fruits and vegetables contain a large array of compounds that function as efflux pump inhibitors. The group includes interesting compounds like quercetin, the flavonoid found in oak, red onions and cilantro; biochanin, the flavone found in alfalfa and red clover; and baicalein, a flavone found in the herb thyme.

Our research has focused on digestive metabolites of chlorophyll which also have inhibitory properties. So, in addition to the other nutritional benefits they provide, green vegetables seem to support beneficial microbial populations and suppress bacterial pathogens, including those with antimicrobial resistance. Efflux pump inhibitors show varied levels of activity against different efflux pumps, so a diverse diet will contain many different kinds of inhibitors to act against the wide variety of pumps that exist in a complex bacterial population.

These findings also apply in principle to what we feed our livestock.

Unfortunately, when I have presented this information to various livestock groups, there is resistance to changing current ration regimes. The status quo is powerful. I am told that in spite of the research, there are numerous economic and logistical reasons that livestock are fed standardized and simplified rations. Most often corn and soybean meal is supplemented with amino acids, minerals, vitamins and other ingredients like distillers grains. Unlike the diet of grazing or forage-fed animals, the typical livestock ration appears to be deficient in efflux pump inhibitors, the compounds that exert beneficial effects upon gut microbiology and health. For those familiar with this topic, I acknowledge that soybeans contain genistein (with pump-inhibiting properties) but it’s only one compound that is degraded by gut microbes, making it less effective than an array of other plant compounds.

These deficient rations make gut health and pathogen exclusion more difficult to achieve, and also may contribute to some of the nutritional and microbiological issues that trouble the livestock industry. A related example is the presence of *E. coli* O157:H7 that is exacerbated by feeding high levels of distillers grains to cattle. So while the feed industry is currently showing interest in gut health, past efforts to standardize and simplify least-cost livestock rations have had unanticipated consequences that we are just beginning to understand.

This is not to suggest that a feeding strategy solely focused on high levels of efflux pump inhibitors is a “cure all” for the livestock industry. Nutrition continues to be a complex subject and while we know a lot, we also realize we don’t know everything. I am not suggesting we start feeding chickens a diet rich in thyme or that we turn all hogs out to pasture, but adding a little alfalfa or a similar ingredient might help. The possibility of health benefits from improved livestock rations is something we need to keep working on.

Changes in livestock feed rations also might create additional market demand for that elusive “third crop” rotation that our intensive corn/soybean system needs from a water quality and soil health perspective.

Adding some greens to animal diets may be a good example of modern science leading us back to what our grandparents knew intuitively. Grandma may not have grasped the details, but she knew what she was talking about when she said: “Eat your vegetables.”

Mark Rasmussen

(For those interested in more detail on this topic, feel free to contact me, markkras@iastate.edu).

LEARNING GOES BEYOND PRODUCTION

INCUBATOR (continued from page 1)

businesses, and LSI selects promising candidates from that pool to move on to Phase 2 of their program: growing on increasingly larger plots of land—first a 50-by-50 foot area and then a quarter-acre sized plot—and selling their produce at farmers' markets.

Often it is not just individuals but whole families managing the land together. Farming provides an opportunity for the family to spend time together and for the adults to share cultural traditions with the next generation. The community approach also spreads the labor burden.

Global Greens helps the refugees develop their record keeping, business planning and marketing skills. The farmers sell their produce at the weekly LSI Farmers' Market, at the Iowa Food Cooperative and as occasional vendors at the Downtown Des Moines Farmers' Market. They also have opportunities to learn about wholesale markets, selling to some restaurants and working with Eat Greater Des Moines's Local Food Box program.

"They choose what to plant and how to plant it," says Soulis, "but we help them determine what customers want, what doesn't sell well and how to price their produce."

Bizimana Charles, for example, is a Burundian refugee in his second year farming a quarter-acre plot. After last year, he asked himself, "What do my customers need more of?" His answer: additional varieties and a lot of onions.

Last year, Charles sold out of onions quickly and missed a wholesale opportunity. This year, he is growing many more onions and has diversified his operation in order to attract customers. He has planted four varieties of potatoes; three different types of green beans, beets, tomatoes and eggplant; and two varieties of peas, spinach and basil. He is growing a mixture of American and African crops.

Angelique Hakuzimana also strikes a balance between American and African produce on her quarter-acre plot. She is growing both sweet corn and an African corn that is often used to make flour. She also is planting cassava, which is both a staple food and cash crop in her native country of Rwanda.

Global Greens farmers only plant non-GMO seed and do not use synthetic fertilizers or pesticides. All Global Greens produce is Certified Naturally Grown.

Leopold grants support education efforts

The Leopold Center's Marketing and Food Systems Initiative has supported this work through three competitive grants, beginning with a one-year planning grant in 2011.

"What I like about the Global Greens Program is that it goes beyond learning how to grow products," says Craig Chase, who leads the Initiative. "The participants are experienced farmers, so they know how to produce. They just need to learn more about how to develop and run a farming business in Iowa. Once those skills are learned, they are likely to be more successful."

The latest grant will help the eight farmers on quarter-acre plots transition to their own land. It will take the farmers an estimated three to five years to complete the transition from the quarter-acre incubator farm to an independently successful enterprise. There are many more refugees looking forward to the opportunity to cultivate quarter-acre plots of their own.

"We have more interest than we have space, at the gardening level as well as at the farm" says Soulis. "We're always looking for more land."

See article about curriculum on page 7.



Ta Kaw Paw (center) and her family plant beans on a quarter-acre plot. Global Greens has some machinery that the farmers share, but most of the work is done by hand.



Angelique Hakuzimana plants cassava roots on her quarter-acre plot. She will cover the plants to trap heat since cassava requires the warmth of the tropics.



Bizimana Charles plants peas on the quarter-acre plot he tends with his son. "Everyone wants to be first getting things in the ground," he says.

[Photos by Stefanie Trout]



TOWARD A SUSTAINABLE

Future

Our 'collision course'

... the notion of ever-lasting economic growth has gained virtually ubiquitous popularity, both with policymakers and in public discourse, while the idea put forward by physical scientists — that we live on a finite planet that cannot sustain infinite economic expansion — has been treated as an opinion of the lunatic 'doom-saying' fringe. — Australian writer Kerryn Higgs

In her 2014 book, *Collision Course: Endless Growth on a Finite Planet*, Kerryn Higgs provides us with a comprehensive, insightful historical analysis of how we came to believe unlimited economic growth not only is possible, but also the only way to solve our problems while achieving a good quality of life for all. Of course, as Higgs points out, that proposition has been challenged by many scientists dating back to the classic study, *The Limits to Growth*, produced by Donella Meadows and her colleagues in 1972. The endless growth concept also has been questioned by ecological economists, who say that continuing to pursue unlimited growth on a finite planet results in “uneconomic growth.” Unlimited economic growth eventually causes so much damage to the resources on which economic growth depends that the result is “illth” rather than “wealth.” (Daly 2011)

Our food and agriculture enterprises already may be arriving at that point of uneconomic growth.

Only a few decades ago, the pursuit of unlimited economic growth led agriculture to adopt a singular management objective: maximum, efficient production for short-term economic return. That objective led to exploitation of natural resources required for such an economy (minerals, metals, fossil fuels, water, soil, etc.), which now are being depleted. As a result, it has become very difficult for farming practices dependent on these resources to achieve positive economic returns. This management objective also led agriculture to externalize all “wastes” (excess nutrients, excess pesticides, carbon dioxide emissions, etc.), and the costs of these externalities now are coming home to roost.

Eventually, depletion of these natural resources contributed to other costs, such as impairment of the ecological services provided by these natural systems and pollution, both of which make growth even more “uneconomic.” Some additional costs are the more severe weather events due to climate change caused by increased carbon emissions, an especially devastating situation for agriculture. As every farmer knows, favorable weather is a major factor that sustains productivity and economic growth on the farm! Consequently, our insane commitment to pursuing a future of unlimited economic growth in the face of depleting resources and impaired ecological services could put us on the path of uneconomic growth more quickly than we are willing to admit. This is our “collision course.”

Numerous insightful authors advise us to quickly and radically begin making a transition from unlimited economic growth, and unlimited human population growth, to an alternative paradigm that acknowledges our dependence on the “health” and resilience of nature to sustain our own health and well-being.

Here are just a few examples.

- Ugo Bardi has published a comprehensive study on the extent that we are extracting minerals on which our industrial food system depends. This “plundering of the planet” does not bode well for the future of this system; we need to redesign a food system that does not depend on these inputs. (Bardi 2014)
- Richard Heinberg offers yet another book of essays depicting how our depletion of fossil fuels will alter our future. He also talks about some of the changes needed as we move into a future “beyond” fossil fuels, and how such changes could actually improve our quality of life. (Heinberg 2015)
- Andrew Winston provides us with radical, practical strategies for actually making the major changes if we want our businesses (including food and agriculture) to succeed in a future of climate change, depleted natural resources, and a more “open” world of social media. (Winston 2014)

The combination of these and other resources can help us make “big pivot” changes that can free us from an irrational commitment to unlimited economic growth on a limited planet. Only then can we embrace a more resilient, regenerative model of development that focuses on the “health of the land” and recognizes that land health is essential to our health because we are part of the biotic community.

Of course, Aldo Leopold reminded us that land health is “the capacity of the land for self-renewal.” The good news is that we already know how to manage land to enhance that capacity, as Leopold also acknowledged. First, we need to move beyond the goal of unlimited economic growth, which in any case will become necessary as our current economic growth becomes increasingly “uneconomic.” It is in our self-interest to begin that big pivot change sooner rather than later.

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PROGRAM PROVIDES OPPORTUNITY TO CONNECT

CERTIFIED GRAZIERS (continued from page 1)

Master Conservationist and Master Woodland Manager extension programs.

Grants initiate pilot programs

Both grazing courses were pilot programs begun with competitive grants from the Leopold Center to ISU Extension beef field specialist Joe Sellers. Working with the Iowa Beef Center, Sellers received an Ecology Initiative grant to develop Greenhorn Grazing, a program for people new to grazing. About 130 people have completed the Greenhorn Grazing program since 2009. In 2012, he received an Ecology Initiative grant to create the Certified Grazier program, which has about 60 graduates. Both programs have been offered by other extension field specialists throughout Iowa.

Sellers said he saw a need to support the grazing industry in Iowa, which has seen a loss of two million pasture acres since 1997, most going into corn and soybean production. Educational programs could provide needed information, as well as create a space for networking, both for experienced producers and younger producers getting started in grazing.

"Pasture acres in Iowa have dropped by 21 percent in the past five years, but the number of beef cows has dropped only about 10 percent," Sellers said. "People are managing more cows on fewer acres, so we are being creative and holding our own compared to other states."

Sellers said producers are interested in maximizing production of high-quality forage, which in many cases will lead them to rotational grazing. And since much of

the state's grazing takes place on land that is marginal for row-crop production, it's important to know how to manage those grasslands.

Glen Rowe said he's always interested in learning more about grazing, especially the rotational grazing that his son Justin introduced to their operation several years ago. Justin was enrolled in the Greenhorn Grazing course about the same time they set up a paddock system to help them move cattle more frequently, allowing the pasture to accumulate new growth.

"Now we rotationally graze everything," said the younger Rowe, who lives in Dallas Center and manages spring and fall calving. His brother, Tanner, farms and runs the Rowe feedlot, for when calves leave the pasture.

"[From the classes] I learned that a lot of people are doing more than what we are and we're always looking to improve our grazing to the next level," said Justin. "I've learned over the years that I can take what is a really good idea for someone else and adapt it to work for me."

In-depth topics, field application

For Sara Shepherd in Adair County, becoming a Certified Grazier in 2014 meant that she could learn about a concept in class, then immediately see it applied in the field and talk to the producer. She does not rotationally graze, but hopes to improve forage resources first. Learning how to evaluate a pasture in terms of its strengths and weaknesses was especially helpful, she said.

Shepherd is relatively new to grazing

 www.leopold.iastate.edu

Grants related to this program:
Sustainably growing Iowa's beef herds
Implementing Master Grazier Certification
Greenhorn Grazing
www.leopold.iastate.edu/grants

Iowa Beef Center
www.iowabeefcenter.org

beef cattle – this is her third year – so meeting other producers was a plus. "They are such a wealth of information," she said.

Dennis McLaughlin, who farms near Cumming in Madison County, also completed his grazing certification in 2014. "I thought the classes would be a good opportunity to brush up on some things," he said.

McLaughlin is a fifth-generation farmer and began rotationally grazing about 15 years ago. He has 20 paddocks for his 40-head cow-calf operation, and also grows corn, soybeans and oats. He's found that cover crops, which he's used the past three years, also work well with grazing cattle.

"I can graze [the cover crops] in the fall, and the cattle really seem to relish the turnip leaves and the rye," he said. "I've been doing it under a cost-share program on 50 acres, and would like to keep it up, if I can get some issues resolved, like aerial seeding."

Like the Rowes, McLaughlin said learning new things provides an incentive for him "to take grazing to the next level" in his operation. Upon reflection, McLaughlin said he's glad that he added rotational grazing to his farm.

CERTIFIED GRAZIERS (continued on page 7)



Photo courtesy Iowa Cattlemen's Association

Above left: Glenn Rowe in his cattle pasture. Although he has been grazing livestock all his life, Rowe says the Certified Grazier program has given him an opportunity to keep learning.



Photo courtesy Practical Farmers of Iowa

Above right, Dennis McLaughlin says he has seen his land improve since adding rotational grazing to his operation. The classes also provide an incentive to try new ideas..

PROGRAMS CONTINUE, OTHERS ADDED

CERTIFIED GRAZERS (continued from page 6)

"The big change is that I've seen the land improve," McLaughlin said. "We went from continuously grazed pastures that were full of ragweed by late summer to a nice mix of grasses and red clover."

He said he received some good advice during his first years of rotational grazing, to "not plant anything but fence posts." McLaughlin explained: "The idea is to see what already is there. My grandparents probably fed red clover hay on these acres at one time. But just to see improvement on the land is so gratifying."

Grazing programs continue

The Iowa Beef Center staff continue to develop grazing management programs. New efforts in 2015 include assisting with Foundation Pasture Management Training for NRCS staff across Iowa, plus a new "Grassroots Grazing" program targeting young and beginning beef producers. Later this year IBC will provide updates for graduates of past grazing courses, launch YouTube videos on grazing topics and provide networking opportunities for graduates of the Iowa Certified Graziers programs.

Iowa State University Extension and Outreach is offering the Greenhorn Grazing series in northeast Iowa this year. The first session was held June 10, but other day-long workshops are scheduled in July, August, September and November. To register, contact Delaware County Extension, (563) 927-4201.

Sellers has a current competitive grant from the Leopold Center Cross-Cutting Initiative to evaluate the economics of various cow production systems. Several of the 30 producers cooperating in the study are graduates of the Certified Grazing program.



Photo courtesy ISU Extension and Outreach

A highlight of the 2014 training program was an Iowa visit by nationally known grazing consultant Jim Gerrish (in white hat, above). A week of events drew more than 300 people.

Grazing native plants

A new publication from the Leopold Center offers evidence and case studies for prescribed grazing, short intervals of grazing livestock as a prairie management practice. Prairie management typically involves both prescribed burning and mowing, but ISU agronomy professor Mary Wiedenhoef said grazing livestock using this practice also can promote land health. She outlines the process in a 16-page color publication, *Grazing Native Plants in Iowa: Processes and Experiences*, available at www.leopold.iastate.edu/grazing-native-plants.

CURRICULUM FOR BEGINNING FARMERS

A new manual compiles dozens of existing training resources for beginning and aspiring Iowa farmers into one concise curriculum. The 48-page guide is divided into three sections: production practices, from soil and composting to small farm equipment and whole farm planning; post-harvest handling, including food safety and seed saving; and business planning; and basic farm finances.

Each segment has multiple modules covering different topics and is organized by learning objectives, hands-on activities (when applicable) and links to worksheets and additional resources.

The Beginning Farmer Curriculum was prepared by Leopold Center Program Assistant Alice Topaloff, with support from the Iowa State University Extension and Outreach Local Foods Team. It is designed to be used by those interested in hosting a farmer training program as well as by beginning farmers who want help locating existing resources.

Get it on the Leopold Center website: www.leopold.iastate.edu/pubs, and at the Extension Online Store: <https://store.extension.iastate.edu>.

News & Notes

The STRIPS Research Team (Science-based Trials of Rowcrops Integrated with Prairie Strips) has a new publication to answer common questions about this conservation practice. *Prairie Strips On My Land: Frequently Asked Questions* is a 16-page booklet that outlines brief information about STRIPS, from why people are interested in this practice, what and how to establish STRIPS, what to expect as far as costs and maintenance of STRIPS. Printed copies are available by contacting the Leopold Center, (515) 294-3711, or at: www.leopold.iastate.edu/STRIPS-FAQ.

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One of the Leopold Center's newest board members, Cathy Kling, was elected to the National Academy of Sciences, among the highest honors for U.S. scientists and engineers. She is the first woman from ISU and the 11th faculty member to receive this recognition for research.

...

Another Leopold Center partner also has received a national award. The Environmental Law Institute has selected Iowa Learning Farms program director Jackie Comito for its prestigious National Wetlands Award for outreach and education. Comito also leads the youth water education program, Water Rocks!, and directed development of the Conservation Station three-vehicle fleet, which received substantial support from the Leopold Center.

...

The Aldo Leopold Foundation and the University of Wisconsin are hosting a conference in Baraboo August 12-15, Building a Land Ethic. Formal and non-formal educators are invited, as well as others interested in advancing Leopold's land ethic. Details on the foundation's website, www.aldoleopold.org.

Trees get top spot at international event

Trees in Iowa? Many people probably see them as “big weeds,” but that wasn’t the sentiment in Ames recently. Researchers and landowners from around the world shared knowledge, experiences and enthusiasm for the role for trees in modern agriculture at the 25th North American Agroforestry Conference held May 30-June 2 in Ames. Leopold Center Ecology Initiative leader Jeri Neal served on the conference planning committee.

Through the more than 50 presentations, panels on farmer practices and policy gaps, area tours, and keynote addresses, attendees all shared one message: this relatively unremarked set of practices has a critical role to play in ensuring a modern, climate-smart agriculture.

Agroforestry was presented as an essential tool for farmers, ranchers, woodland owners and communities – in fact, anyone who wants to use sustainable strategies to enhance agricultural practices and protect natural resources. Presenters and tour site hosts explored the science, costs and practices around “afforestation,” that is, putting trees back on the land to reduce risk and increase resilience. The key is putting the right practice in the right place for the right purpose: although there are five general practices (see below), they are always unique to the landowner and place.

Bear Creek

It was no coincidence that Bear Creek in Story County was one of the first places conference participants visited. Bear Creek is a National Demonstration Watershed. Ten continuous miles of this stream are lined with riparian buffers, some nearly 25 years old. All on private land, the buffers are equipped with wells and other equipment used for gathering research data. The Leopold Center was among the initial supporters of this long-term project.

In addition to providing habitat for wildlife, the buffers have made a tremendous difference in keeping water where it falls. Leigh Ann Long has a Leopold Center competitive grant to evaluate performance of the buffers in the past 15-20 years. “We’ve had seven inches of rain in an hour with no runoff,” Long told a group touring the site, “but in that nearby cornfield, there will be runoff within 3-5 minutes.”

Dick Schultz, ISU professor in Natural Resource Ecology and



Iowa State graduate students Morgan Davis (left) and Tyler Groh explain their saturated buffer research during the tour at Bear Creek.



Accepting the award from Trees Forever president Shannon Ramsay (left) are Leopold Center Distinguished Fellow Fred Kirschenmann and Laura Miller, communications specialist.

Management, was among the initial researchers at Bear Creek and led a portion of the tour. “After 20 years, 40 bird species are using this buffer system, but my big wow is that we’re beginning to see wild turkeys move up this buffer,” he said.

Ongoing studies at the site includes research on edge-of-field practices to improve water quality, including bioreactors and saturated buffers, and measurements to determine the amount of greenhouse gas emissions from different land uses.

Trees Forever honors Leopold Center

At the same time that Iowa State hosted an international conference on agroforestry, the Iowa-based Trees Forever group gave its Presidents Award to the Leopold Center.

“When the Bear Creek research project began, the Leopold Center had the vision to set up interdisciplinary teams, which is really what made the Bear Creek project stand out as the leading site in the United States on the importance of trees, shrubs and grasses for improving water quality,” said Shannon Ramsay, founding president and CEO of Trees Forever. “The Leopold Center has had a huge impact on the quality of life and food in Iowa and even internationally.”

Trees Forever staff worked with members of the ISU team to learn about riparian buffers and then set up its own program, Working Watersheds: Buffers and Beyond. Ramsay said that as a result of the program, there are buffers in every Iowa county on more than 500 sites.

What is agroforestry?

Agroforestry is a unique land management approach that intentionally blends agriculture and forestry – combining trees and/or shrubs with annual crops cultivation, livestock production and other farm activities – to create environmentally sustainable and profitable land-use systems. This can be accomplished on the land using one or a combination of five general practices:

- Windbreaks – for fields, farm buildings and livestock
- Buffers along streams
- Silvopasture (integrating trees, livestock and forages)
- Alley cropping (annual crops, trees and shrubs in same fields)
- Forest farming

Celebrating soils in 2015: What would Aldo say?

By DENNIS KEENEY, Guest columnist

Aldo Leopold has given the world great concepts linking the arts and sciences to the natural world. These thoughts developed over his lifetime, culminating in “The Land Ethic,” the final chapter in his epic book, *A Sand County Almanac*. There is no doubt that soil was central to his thinking on the harmony of people and the land.

To fully understand the “Land Ethic,” I turned to Leopold’s thinking on the “common concept of land.” Many of my thoughts are from Leopold’s writings and from a 2005 speech by Julianne Lutz Warren, titled “The Speech of Hills and Rivers: Aldo Leopold’s Common Concept of Land.” This rather obscure paper might be one of the great insights linking Leopold’s progression in his critical thinking.

Leopold’s evolving concept of land was inclusive: soil, water, plants, animals and people. He wrote, “Health is the capacity for of the land for self renewal, and conservation is our effort to understand and preserve this capacity.” I think it is important that Leopold defined conservation as more than what we now tend to regard as control of soil erosion. He wrote, “Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. ... When a change occurs in one part of the circuit, many other parts must adjust themselves to it. ... Evolutionary changes, however, are usually slow and local. Man’s invention of tools has enabled him to make changes of unprecedented violence, rapidity and scope.”

Leopold goes on to write about these violent (the use of this word has been debated, but I think it is appropriate) changes. These changes interrupt the flow of energy through the circuit.

DENNIS KEENEY was the first director of the Leopold Center, serving from 1988 to 2000. He is emeritus professor of Agronomy and Agriculture and Bio-systems Engineering at ISU. His memoir, *The Keeney Place: A Place in the Heartland*, is available: www.TheKeeneyPlace.com.



- In short, Leopold proposed that:
1. Land is not merely soil;
 2. Native plants and animals keep the energy circuit open and,
 3. Manmade changes are of a different order than evolutionary changes. These include changes in composition of floras and faunas and loss of wild species.

He clearly was predicting the impact of pesticides, tillage and other drastic (violent) manipulations of soil. He wisely said, “Agricultural science is largely a race between the emergence of new pests and the emergence of new techniques for their control. Fertility is the ability of soil to receive, store, and release energy. ... Soils depleted of their storage, or of the organic matter which anchors it, wash away faster than they form. This is erosion.”

Leopold adopted the concept of the Land Pyramid, the flow of energy and materials through the biota, the art of eating and being eaten. Where the pyramid is disrupted, the system crumbles. The rising tide of materialism, the concept of land as a piece of property to be used and abused for strictly economic gains, has fractured the pyramid and only a revisited “Land Ethic” can point the way back. Leopold spoke of the love of land, and that we only can be ethical in relation to “something we can see, feel, understand, love or otherwise have faith in.” Land must have beauty to be loved. Beauty meant healthy, the farm that is painted by the farmer’s brush. Indeed land needs the artist to express the land aesthetic, to learn to “read the land.”

It is hard for me to love a vast monoculture of corn or beans stretching to the horizon, even though the banker may regard this as a most magnificent view. It is land that only is viewed on computer screens as the heavy equipment moves over it, land that has no beauty or meaning other than the costs of preparing it for planting, which

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Find more on our web page devoted to International Year of Soils: www.leopold.iastate.edu/year-of-soils

“The Speech of Hills and Rivers” www.ExactingEditor.com/LandHealth.html

breaks the Land Pyramid at its base, the soil. Having soil erode during fall and spring downpours, taking with it precious nitrogen obtained from some fertilizer manufacturing plant and flowing into tile drains and on to the ocean where it wreaks havoc with other ecological systems, clearly is unethical. Yet we are told that only this type of “farming” will feed the world.

I want a new and bold approach to our concept of soils and land health. We need to critically question the industrialism that invades the land and, as Leopold asked us decades ago, to “feel the soil between our toes.” We need a new understanding of how land actually works and a new appreciation for the “Land Ethic” with soil at its base that is essential for the survival of our country and the human race. Our health depends on foods that are healthy, grown on soils that are healthy and capable of filtering the water we drink and cleansing the air we breathe.

There is hope and joy in the soil and the land. Celebrate it with the Leopold Center.



Leopold and others inspect an eroded streambank near Coon Valley, Wisconsin. Evidence like this affirmed Leopold’s thinking about the importance of soil health. Photo courtesy of the Aldo Leopold Foundation; more at: www.aldoleopold.org.

Local pork on school menus: A win-win situation

By ARLENE ENDERTON, Leopold Center Program Assistant with TERESA WIEMERSLAGE

Farmers, a local locker and students are all excited to have local pork on school lunch trays in northeast Iowa.

While hogs certainly are abundant in Iowa, getting locally grown and processed pork on the school lunch menu hasn't been as easy as one might think. This story begins in 2012, when Nick McCann, Food Value Chain Coordinator for Iowa State University Extension and Outreach (ISUEO), organized classes to help small meat processors find ways to increase their financial viability. At the same time, school food service directors faced challenges meeting new school meal standards that were part of the Healthy Hunger Free Kids Act. The food directors looked to the Northeast Iowa Food and Fitness Initiative, where ISUEO is a core partner, to help them design menus to satisfy the new requirements.

McCann held two classes with locker managers in northeast Iowa, using funds from the Leopold Center's competitive grants program. They focused on increasing business during the typically slow season in the spring, when locker owners face the tough choice between laying off, and potentially losing, workers or continuing to employ them at a financial loss to the business. That's why many lockers rely on profits made during the busy fall season to cover losses during the slow season. McCann explains, "If you can just break even during slow season, you can convert those losses into gain. That money goes to the bottom line."

Meat lockers and local foods?

Merrill Angell, owner of County Line Locker in Riceville, attended the meetings with McCann. He envisioned a connection between farm to school programs and his business. "I was always curious when they talked about local foods for schools, they didn't talk about meat [...] Why not supply our local schools or hospitals?"

Angell suggested starting with off-matrix hogs. He explained: "I commented on 'seconds' – belly ruptures or something that gets docked at packing plants ... there's nothing wrong with the hog. Why can't we use these seconds [...]?" Angell initially saw processing these hogs as a

potential solution to increase business during the locker's slow spring season. While not everything was in place yet to begin processing local pork for schools, the seeds had been planted.

Meanwhile, school food service directors were working with the northeast Iowa Initiative to create a seasonal menu. The menu repeats itself every five weeks and in the first year of that effort, districts focused on testing recipes and getting students' approval. Beginning with the

2013-14 school year, ISUEO used a Leopold Center grant to develop the menu further, incorporating local foods into the mix and helping

four schools double their purchases of local foods, and offering Farm to School educational programs.

About the same time, pork roasts were dropped from the USDA's food availability lists and districts were forced to purchase pork at a higher cost from a mainline distributor. Referred to as "commodities," these USDA food products are purchased by the federal government to support agricultural producers, and then sold to institutions (such as K-12 school districts) as part of a meal reimbursement program. The local pork product proved to be a competitive replacement.

Hub starts school delivery

A final piece fell into place in 2013. The Iowa Food Hub, a nonprofit aggregator and distributor of local food, received a USDA grant to purchase a refrigerated truck to deliver perishable local food products, including meat. They bought the truck at the beginning of the 2013-14 school year.

Everything was now on target to begin adding local meat to school meal trays. McCann and Teresa Wiemerslage, another ISUEO staffer who works with the Initiative, facilitated the first steps by organizing independent hog farmers, County Line Locker, the Iowa Food Hub, the Northeast Iowa

www.leopold.iastate.edu

Grants related to these efforts:
Implementing a seasonal cycle menu
Increasing the capacity of a local food hub
Improving profitability for small meat processors
www.leopold.iastate.edu/grants

Food and Fitness Initiative, Luther College and other schools to begin serving local pork. The first meat was processed and delivered in February 2014. Angell recalls comments from food service staff about the appetizing smell of fresh pork cooking in the kitchen. "It's fresh stuff[...] it's only days old."

During the past school year, County Line Locker has continued to process 10 hogs every other week for schools and Luther, with additional hogs occasionally processed during off-weeks. Processing cost is kept affordable by preparing bone-in primal cuts for schools and MSG-free bacon and hams for Luther.

Seasonal work helps fill gap

So, how did County Line Locker manage to continue processing hogs for schools during the busy fall season? Angell came up with his own solution. When they fell behind in the fall, they froze deer that came in for custom processing. When business slowed in the spring, they were able to defrost the deer and process them further. Angell was pleased with this solution, "It extended our work schedule. We always drop off in the spring, so it helped fill the spring void and keep people employed."

LOCAL MEAT (continued on page 11)



Merrill Angell (center) leads a tour of his locker.
[Photos by Northeast Iowa Food and Fitness Initiative]

Chef presents his vision of the future of food

It was like I was the Emperor with no clothes.” That’s how farm-to-table chef Dan Barber describes his visit to an upstate New York farm, where he had been sourcing wheat for bread that was getting rave reviews from customers at his acclaimed Blue Hill restaurant. He was curious to find out what made the wheat so delicious.

Instead, organic farmer Klaas Martens became the star of Barber’s best-selling book, *The Third Plate: Field Notes on the Future of Food*. Barber talked about his book and the essential connection between soil and food when he presented the Shivvers Memorial Lecture on April 8 at Iowa State University. An estimated 580 people attended the event, a record number for this annual lecture hosted by the Leopold Center.

On the New York organic farm, Barber expected to see vast wheat fields rather than an assortment of crops – from clover, corn and millet to kidney beans, broccoli and buckwheat – and very little wheat. The other crops were part of a complicated rotation that Martens used to increase fertility and structure of the soil and disrupt disease cycles. While there were good markets for wheat, corn and soybeans, Barber said Martens wasn’t able to sell some of the other crops; some were plowed back into the soil.

“Here I was, a poster child for the farm-to-table movement and I wasn’t using any of those other crops in my menus, just the wheat. I wasn’t investing in the entire

system,” he said. “It was a gastronomic revelation and an agricultural one.”

The visit provided the basis for Barber’s theory that sustainable cuisines historically have included all products from a region. Those products vary widely, depending on what the local landscape, farming community and ecology can support. Usually out of necessity, certain ingredients are used in new ways or become substitutes for others.

Likewise, he said future food systems need to make better use of all products in that system. “Eating from the whole farm” is a concept that needs to be adopted by the local foods movement.

“We need to figure out what a farmer needs to grow so he can raise the food that we covet,” Barber said. “We shouldn’t be able to just cherry-pick from the farm, buy our tomatoes and zucchini and go home. We need to make use of all the parts of the system.”

His Blue Hill restaurant serves *Rotation Risotto*, a dish that combines foods from many of the crops in Martens’ rotation. It includes sprouted or malted grains, a puree of cowpea shoots and mustard greens, what one of his waiters describes as a “nose-to-tail approach to the farm.”

Barber says this approach will provide numerous opportunities, especially in regions that specialize in crops well-suited to the local soils and climate.

“A good plate of food that is delicious is an expression of good agriculture,” he said.



Dan Barber (in chef’s apron) is interviewed by a local radio reporter at the greenhouse and farm operated by the Stone Barns Center. [Photo by Jerry DeWitt]

DISTRICTS EXCEEDED GOAL TO DOUBLE PURCHASES

LOCAL MEAT (continued from page 10)

Farmers also are pleased. The Iowa Food Hub estimates that on average farmers receive an additional \$15 per head by selling to schools rather than to off-matrix buyers, such as a barbeque company. Plus, farmers like the fact that their products help feed local students.

The four community school districts that created a seasonal cycle menu are Allamakee, Decorah, Postville and Turkey Valley. All exceeded their goal to double purchases of local food. They had hoped to buy \$18,000 of locally grown food every year; in 2013-14, they purchased \$22,897. During the past school year purchases by these four schools doubled again, totaling \$52,400; schools served 3,315 pounds of pork (loin, roast and ground).

Watch for new toolkit

Nick McCann and Leopold Center graduate student Savanna Lyons have written a new toolkit about this project that will be ready in fall 2015.



This pork sandwich was served in the Decorah Community School District.

Three communities added to Ag Urbanism Toolkit

Three more Iowa communities have been selected to participate in a planning process to bring more local food offerings to their region. The new communities are Dubuque in eastern Iowa, Cass County in southern Iowa, and a nine-county region called Healthy Harvest of North Iowa.

The planning process is a pilot project of the Community Design Lab at Iowa State University and is funded by competitive grants from the Leopold Center. The design program, called the Agricultural Urbanism Toolkit, involves community capacity-building, research and analysis, public input, prioritization and selection of strategies and projects that would be best-suited to a region. Examples include community gardens, food hubs, shared-use kitchens and edible landscaping.



LEOPOLD CENTER
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Highlight Events

July 16-18

“Working Prairies” will be the theme of the 2015 Iowa Prairie Conference in Cedar Falls. Keynote speaker will be Lisa Schulte Moore, who works with the ISU STRIPS team (Science-based Trials of Row-crops Integrated with Prairie Strips).

August 10

This Fruit and Vegetable Field Day at the ISU Hort Farm near Ames will cover current research for commercial production and small-scale produce growers.

August 18

Learn about the latest research on organic production at the Neely-Kinyon Organic Field Day near Greenfield. Included on the day's program are organic no-till vegetable production, livestock integration, and a long-term comparison of organic/conventional cropping systems.

November 6-7

Save the date for the Women, Food and Agriculture Network annual conference in Davenport.



Summer field days

STRIPS field coordinator Tim Youngquist (left) leads a tour of prairie conservation strips at the Iowa State University McNay Research Farm in southern Iowa. See the Leopold Center calendar for a complete list of field day events offered by Iowa Learning Farms, ISU and Practical Farmers of Iowa.

[Photo courtesy Iowa Learning Farms]

More details, events

Check the Leopold Center web calendar:
www.leopold.iastate.edu/news/calendar

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