Evaluating Some Leopold Center Success Stories

Looking forward is good, but sometimes looking backward also yields worthwhile insights. Leopold Center evaluators Corry Bregendahl and Arlene Enderton routinely scrutinize project results to determine the long-term outcomes and impacts. Here are a couple of successful projects with Leopold Center sponsorship that were examined this past year.

MarketMaker

In 2005, Iowa State Extension’s Value Added Agriculture Program received a $25,000 competitive grant from the Leopold Center to purchase data and create the Iowa version of the MarketMaker website. The MarketMaker database consolidates food industry information, including the locations of a variety of food businesses—such as farms, wholesalers, restaurants and grocers. Available free of charge to the public, visitors to the website can use MarketMaker as a directory to find producers and products. (See www.markettakeriowa.com.)

A decade later, The Iowa MarketMaker website lists more than 15,000 Iowa food businesses, including 486 producers, and is helping these businesses connect with one another and gain new markets for their products. The online database has especially benefitted farmers selling through non-commodity channels. Nearly 87 percent of the farms registered on MarketMaker’s national 19-state network sell their products directly to consumers and wholesalers. These farms have each been contacted an average of 2.9 times by customers or other food businesses that found them on the MarketMaker site.

While MarketMaker encourages connections between food businesses all over the United States, it also has local applications. Value Added Agriculture is collaborating with the Regional Food Systems Working Group (RFSWG), a network of 13 Iowa local food groups, to register food businesses in their region with MarketMaker. The Value Added Agriculture Program also is creating MarketMaker widgets for RFSWG websites, which will allow users to search for food businesses in their RFSWG region.

Helping Iowa horticulture producers

In just four years at Iowa State University, assistant horticulture professor Ajay Nair has created a thriving, vibrant sustainable vegetable production research and education program. Building on his research in cover crops, he and colleagues recently received a USDA Sustainable Agriculture Research and Education (SARE) grant to test a hypothesis that a terminated cover crop can act as a barrier and maybe even suppress Listeria that can contaminate a growing melon crop.

“When I moved to Iowa there was a big push in the area of local food production and I could see a lot of [fruit and vegetable] growers getting into the business,” he said. Enthusiasm for vegetable production was high and growers of all sizes were experimenting with a variety of production practices. It was the perfect time for ISU to help expand research and education on sustainable vegetable production. When he first arrived at ISU, Nair met with Leopold Center staff including Craig Chase who leads the Marketing and Food Systems Initiative, to identify priority areas for these producers.

The Leopold Center shares Nair’s passion for sustainable production systems. Therefore, when Nair arrived, the Center’s funding helped him assemble the essential elements to establish his research program: a laboratory, graduate students, and connections with colleagues. Financial support of $50,000 for his research and academic activities was provided from 2011 through 2014. Today Nair’s research focuses on several sustainable practices: cover crops, strip tillage, biochar, high tunnels and crop diversification.
CENTER PROGRAM SUPPORTS EVENTS AROUND THE STATE

Have a conference, special speaker or unique artistic presentation related to sustainability? The Leopold Center has a financial assistance program—the Competitive Educational Support Program (CESP)—to support Iowa-based events with potential to enhance sustainable thinking and practices. Up to $1,000 is available for one-time educational events, programs, workshops, conferences or displays. (See details at www.leopold.iastate.edu/grants/education.) The program is managed by communications specialist Laura Miller with guidance from a review committee.

Here are the events that the Center assisted in staging during FY2015:

**July 2014**
Practical Farmers of Iowa, $1,000, to support the premiere in West Branch and subsequent performances (in Decorah, Chariton, Red Oak and Ames) of Map of My Kingdom, a play on farmland transfer written by Iowa Poet Laureate Mary Swander.

Seed Savers Exchange, Decorah, $1,000, to fund eight scholarships for beginning farmers to attend the 34th Annual Seed Savers Exchange Conference. The conference featured workshops on seed-saving and sharing; the keynote speaker discussed plant breeding for stress-prone environments and a changing climate.

**September 2014**
Story County Conservation Board, $500, to host the Local Food Cycle, a 40-mile bike ride to highlight local food and seven Story County farms. The ride had 120 participants and involved six local chefs.

Horizons Family Alliance, $488, for a Healthy Horizons Harvest Party at NewBo City Market in Cedar Rapids attended by more than 200 people. The Alliance hosts a community garden in a low-resource neighborhood in Cedar Rapids and works with Feed Iowa First to provide excess produce used in the local Meals On Wheels program.
ISU Agronomy Department, $1,000, to support the Pesek-Pierre Colloquium on Sustainable Agriculture in Ames. Speakers were Kate Scow, University of California-Davis soil microbiologist, and filmmaker (Symphony of the Soil) Deborah Koons Garcia.

www.leopold.iastate.edu/2014-pesek-pierre-colloquium

**October 2014**

Iowa Environmental Council, $500, to support their annual conference at Drake University in Des Moines. The program focused on unique consequences and potential solutions to reducing agricultural runoff that contributes to high levels of nitrogen and phosphorus in sources of Iowa drinking water.

**November 2014**

ISU Graduate Program in Sustainable Agriculture, $500, for support of a visit by agricultural economist John Ikerd (Professor Emeritus, University of Missouri-Columbia). He met with two graduate-level sustainable agriculture classes to discuss his FAO-commissioned report on the status of North American family farms.

Women, Food and Agriculture Network, $1,000, for their Midwestern conference in Fairfield with more than 200 attendees and 40 sponsors. The conference featured workshops on soil health, grassroots science and preserving and expanding no-GMO food choices and local foods from area farmers.

**January 2015**

Benton County Extension, $500, to support the Driftless Region Beef Conference in Dubuque attended by 66 people.

**March 2015**

Iowa Stormwater Education Program, $500, for the Iowa Water Conference at ISU. The funds supported a keynote presentation and workshop on the City of Portland’s green infrastructure for stormwater management.

www.leopold.iastate.edu/2015-iowa-water-conference

Luther College biology and theatre departments, $1,000. The grant supported interviews and videography of farmers and community members in the Dry Run Creek Watershed regarding water quality challenges and solutions. The materials were used for four multi-media dance performances of “Body of Water.” The sold-out performances reached about 700 people and a documentary is being prepared about the project.

North America Aronia Cooperative, $250, to support the berry growers group’s first annual conference at ISU in Ames.

Sustainable Agriculture Student Association, $1,000, for an ISU lecture by Vandana Shiva, an internationally known speaker on biodiversity, seed-saving and small farmer rights.

www.leopold.iastate.edu/vandana-shiva

**April 2015**

ISU Student Organization of Sociologists, $300, to host an Iowa State lecture on food justice by Philip McMichael from Cornell University.

www.leopold.iastate.edu/2015-food-justice

**May 2015**

Iowa Valley Resource, Conservation and Development, $500, to support the Third Annual Food Film Festival in Toledo hosted by the Meskwaki Food Sovereignty Initiative of the Fox and Sac Nation. About 40 community members attended the festival featuring five food-related films.

**June 2015**

Johnson County Soil and Water Conservation District, $600, to host 22 women from four counties at a workshop for female landowners about issues related to farm transfer and transition.

Nahant Marsh Education Center of Davenport, $500, to support the Quad Cities Pollinator Conference in Rock Island, Illinois, attended by 275 people from eight states and two Native American tribes. Videos from the conference are archived at:

www.qcpollinatorconference.org
The Graduate Program in Sustainable Agriculture (GPSA) has received support from the Leopold Center since it was established at ISU in 2003. Mary Wiedenhoeft of the ISU agronomy department continued to act as the faculty administrator for the program in fiscal year 2015, with Angela Stone serving as program coordinator.

In FY2015 Leopold Center financial assistance funded portions of six GPSA research assistantships. The recipients of those awards describe their work:

Hannah Dankbar, MS/MCRP in Community and Regional Planning
As a Graduate Research Assistant in Community and Regional Planning, I assisted Gary Taylor with projects for Iowa State Extension and Outreach. Some of these projects include: writing for the Blog for Land Use and Zoning (MidWest Planning BLUZ), adding videos to a flood insurance website and creating materials to aid in the professional development of land use planners in the state. I will continue to work with Taylor on Extension projects this coming academic year.

Dana Jokela, MS in Horticulture
I completed the first year of my experiment looking at no-till and strip-till production of organic broccoli and bell pepper. First-year results show that it is possible to achieve equal yields of bell pepper using reduced tillage production methods, though this did not hold true for broccoli. One of the more noteworthy results among the other data collected for this project was that nitrate leaching was significantly lower in the no-till and strip-till plots, suggesting that this system could be an important part of the statewide initiative to reduce nitrate entering surface and groundwater. I presented these results at several conferences in 2014-15, including the Great Plains Grower’s Conference, the MOSES Organic Farming Conference, and at the annual conference of the American Society of Horticultural Science (ASHS). We also discussed the project at several field days in Ames and at a grower-collaborator’s farm in Grinnell. In addition to my main thesis research, I carried out a pilot study to see whether we could use summer cover crops in conjunction with no-till planting of garlic in the fall.

Elizabeth Kersey, PhD in Anthropology
My research explores seed saving by gardeners as a mechanism for promoting resilient household food systems, for understanding seed saving’s meaning for gardeners who save seed and to identify its role as in situ conversation. Two specific research questions evolved from this work: (1) What are the cultural, historical, personal and practical reasons people cite for saving seed? (2) To what extent does seed saving strengthen an individual/household’s food systems resiliency to climate change?
I hope that my research will lead to discussion with seed savers of questions such as: Is seed saving an activity that spills over into other conservation-oriented or self-provisioning activities? To what extent are gardeners who save seed favoring characteristics tied to noticeable attributes of climate change? Does this become a source of locally adapted seed? Does seed saving promote increased climate-resilient household food systems? What draws individuals to seed saving and what are the barriers to their involvement at differing stages? Preliminary research includes contacting Seed Savers (in Decorah, Iowa) and other seed saving networks. I am developing contacts and anticipate conducting interviews next year.

Eric Britt Moore  Ph.D in Agronomy
My research explores interactions between soil structure, soil organic matter and plant-available water in fields that have long-term winter rye cover crop treatments. This research aims to better determine the influence that cover crop plant biomass additions and year-round root growth have in increasing plant-available water through detailed soil water tension measurements. These measurements, along with soil texture and organic matter data, will compare soils that have been in winter rye cover crops for 14+ consecutive years and those that have never had a winter cover crop. Data gleaned from this study will provide additional information on the role of winter cover crops in increasing resilience to climate variability and in the sustainable intensification of Iowa cropping systems.

Marcie Stevenson  MS in Economics
My current research aims to help determine entrepreneurship’s role on Iowa agriculture. I have compared entry and exit rates of firms for all Iowa firms versus Iowa agricultural firms. Also, I have separated the agricultural industry into different sectors to analyze their trends for entry and exit. Digging deeper, I analyzed the longevity of start-up firms between the two categories. In order to help understand what causes a firm to fail, I have run survival analysis regressions determining probability of business failure based on its firm size, location (whether or not it is adjacent to a metro area) and the population base of the firm’s location (metro, urban or rural). A similar analysis was done to see if the degree of significance for each variable tested changes due to being an agricultural firm and the sector of the agricultural industry in which the firm participates. To deepen my understanding of entrepreneurship and firm survival, I also have begun to evaluate the success of government grants for agricultural start-up firms and their effects on firms’ survival.

Marie Louise Ryan  MS/MCRP in Community and Regional Planning
Last summer I laid the foundation for spending a year in Nepal researching gendered barriers to rice diversity in Nepal’s marketplaces. By identifying the choke points of diversity in the rice supply chain, I hope to determine whether markets can be used as a promotional tool for Nepal’s traditional rice varieties while empowering women to take the lead in agrobiodiversity conservation initiatives.

I like trees because they seem more resigned to the way they have to live than other things do. - Willa Cather
Water Rocks!
Water Rocks! experienced another successful year, thanks in part to Leopold Center funding. In 2014, Water Rocks! engaged more than 15,000 learners at 122 community and youth events, which included all 11 days at the 2014 Iowa State Fair. Iowans of all ages learned about conservation practices both urban and rural, water quality, watersheds, and wetlands. Events and attendees for 2015 are 24 percent above last year as of June 2015.
Water Rocks! hosted two teacher Summits in June 2015 for 53 Iowa K-12 teachers and high school students. At the Summits, they participated in activities, lectures and discussions, culminating with a field trip to see several conservation practices at work on Iowa farmland.
Water Rocks! took home 29 awards at the annual Iowa Motion Picture Association awards ceremony held in May. The videos can be seen on the Water Rocks! website (http://waterrocks.org/), YouTube and TeacherTube.
Iowa Learning Farms
Iowa Learning Farms (ILF) celebrated 10 years of operation in 2014. At the end of the year, ILF surveyed farmers and landowners across Iowa to capture their thoughts on how effective the program has been over the last decade.
Survey results found that farmers look to ILF for trusted information on conservation practices. Those who have attended at least one ILF field day are conservation-minded and have adopted numerous practices on their land. These farmers and landowners also are advocates for conservation, extending ILF’s influence to 65 percent more farmers beyond those attending an ILF field day; and many networked with at least two of their peers about practices such as cover crops and reduced tillage.


In 2014, ILF held 25 field days and workshops for farmers and landowners with over 1,000 in attendance. Over the last decade, ILF has hosted 151 farmer-centered events that attracted 8,158 attendees. ILF continues to hold educational events for farmers across the state, with 10 field days and workshops held between January and June 2015.

Iowa Learning Farms serves as a leading voice in the state on cover crop research, outreach and education. Under ILF leadership and with help from Leopold Center, the Iowa Cover Crop Working Group has the longest running on-farm winter rye cover crop project in Iowa. Reports from the project are available on the ILF website.
The “Conservation Chat” podcast began in 2015. Jacqueline Comito, program director for the Iowa Learning Farms, interviews farmers and agricultural leaders about conservation and agriculture. Iowa Secretary of Agriculture Bill Northey was the inaugural guest for the series. Other episodes included talks with ILF farmer partners and agriculture experts including Leopold Center Director Mark Rasmussen. The podcasts are available at www.conservationchat.org.

ILF and WR! program director receives honor
Jacqueline Comito received the National Wetlands Award in May 2015 from the Environmental Law Institute, Washington, D.C. She was one of seven recipients across the country honored for exceptional and innovative contributions to wetlands.

ILF and WR! partners include the Leopold Center, Iowa State University Extension and Outreach, Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources (Section 319 of the Clean Water Act), Natural Resources Conservation Service, Conservation Districts of Iowa, Iowa Farm Bureau, Practical Farmers of Iowa, and the Iowa Water Center.
LEOPOLD CENTER FUNDS CROPPING STUDIES BY WALLACE CHAIR FOR SUSTAINABLE AGRICULTURE

The Henry A. Wallace Chair for Sustainable Agriculture at Iowa State University is currently held by ISU agronomy professor Matt Liebman. His research, teaching and outreach activities focus on ways to increase soil, water and wildlife conservation in farming systems, while reducing dependence on agrichemicals and fossil fuels. Liebman’s specific interests include comparisons of different crop rotation and crop management systems; weed ecology; and the use of native prairie species as components of conservation buffer strips and as feedstocks for biofuel production.

Liebman participates in teams that are actively studying three cropping systems in central Iowa, all of which have benefitted from long-standing Leopold Center support: the Marsden Farm rotation experiment (for which he serves as team leader), the Science-based Trials of Row-crops Integrated with Prairie Strips (STRIPS) experiment, and the Comparison of Biofuel Systems (COBS) experiment.

Funding from the Leopold Center during FY2015 primarily contributed to the support of graduate student Julie Mueller, who is pursuing an M.S. degree in Sustainable Agriculture and Agronomy (Soil Science). Some of the funds were used to cover a portion of her salary (stipend), benefits and tuition. Mueller began her graduate studies at ISU in 2012. Her research is based at the Neal Smith National Wildlife Refuge near Prairie City, and is a part of the STRIPS project (www.prairiestrips.org and www.leopold.iastate.edu/strips-research-team) located on the refuge. Mueller’s thesis work has focused on measurements of soil properties, including microbial biomass, bulk density, and water infiltration rate, within prairie conservation strips and adjacent cropland.

Funds from the Leopold Center supported research projects led by Liebman whose Wallace Chair office annually receives $20,000 of support from the Center. The funding is secured under an agreement signed in 1997 when the endowed chair was created.

Loveliest of trees, the cherry now is hung with bloom along the bough.

- A.E. Housman
Energy and Environment Summit
The first big event of the year was the multi-state 2014 Extension Energy and Environment (E3) Summit. It featured a number of Leopold researchers and projects and was chaired by ISU BioEconomy Institute Program Director Jill Euken and co-chaired by Ecology leader Neal. The conference highlight undoubtedly was the premiere screening of “STRIPS – the Movie.” (STRIPS is the acronym for Science-Based Trials of Row-crops Integrated with Prairie Strips.) The 13-minute film introduced audiences to a new conservation practice (the strategic addition of a small amount of prairie back into agricultural landscapes) that is garnering great interest both in and outside of Iowa.

The showing was followed by an open panel discussion with the Iowa State University research team about the practice and its potential to generate considerable benefits in water and soil quality, create habitat for wildlife and pollinators, and open up opportunities for biomass production. The film, ‘Restoring the Balance: Prairie Conservation STRIPS,’ along with several outtakes, can be viewed at www.leopold.iastate.edu/stripsthemovie. STRIPS project progress is reported at www.prairiestrips.org.

Prairies
During the year, completed Ecology Initiative research findings provided more scientific basis for “re-imagining” an agriculture that will do a better job of improving the water, soil and biological health that are critical for continued feed, food and fuel production in agriculture. For example, if we introduce prairie into Midwest corn and soybean-dominated landscapes, how might the prairie be impacted by existing practices? How do we determine economic value?

For the first case, a researcher looked at atmospheric nitrogen deposition and developed the infrastructure and baseline data to study the effect of chronic, low-level nitrogen additions in grassland ecosystems, such as tall grass prairie.

For the second example, investigators compared different methods of calculating the crop ‘fuel yields’ use to estimate economic values of prairie for cellulosic energy. They compared carbohydrate calculation methods and found that if the goal is estimating potential ethanol yields per unit land area, it’s acceptable to use constant values from literature or standard methods of estimation. However, if the goal is generating real numbers on biomass ethanol conversions, more rigorous methodologies need to be used.

Third crops
Even if it’s not pure prairie, getting more living “roots in the ground” for more of year is of great interest in Ecology Initiative research. Canola is a ‘third crop’ with potential both as a cash crop (oilseed) and cover
Researchers found that canola shows tremendous promise for reducing soil erosion and the leaching of nutrients into the water. They determined best planting date windows, and recorded winter hardiness and yields of winter and spring canola varieties.

Another Ecology grant explored the challenges and opportunities, including financial returns and barriers to wider adoption and marketing channels, for six different perennial crops that can be used in agroforestry practices. Crops investigated were aronia berry, black walnut, chestnut, Christmas trees, elderberry and hazelnut. The project showed that several of these crops can generate per acre returns greater than row crops over a projected 20-year time frame, although risk is generally higher.

**Water quality**
The quality of water exiting crop fields remains a potent issue statewide. Current surface inlet designs for tiling in fields allow water with high concentrations of sediment, sediment-bound phosphorus, and dissolved phosphorus to enter the landscape’s drainage systems. Researchers showed that blind inlets and filter socks amended with alum can reduce these problems, but a determination of the best practice to use must be site-specific.

Water quality also can be influenced by field applications of animal manures. Another research project provided an assessment of the availability of phosphorus in beef cattle manure for use by crops, updating older manure application guidelines. For beef cattle producers, grazing to improve pasture productivity, biodiversity and grassland wildlife habitat is thought to be possible by using a practice called mob-grazing. Research found that a single mob-grazing event on previously un-grazed ground showed the most success at reaching these goals.

**Agroforestry**
The 14th North American Agroforestry Conference, “Agroforestry as a Catalyst for On-Farm Conservation and Diversification,” was held in Ames in June 2015. Attendees on a pre-conference tour had a chance to view a variety of central Iowa agroforestry systems including riparian forest buffers, windbreaks, and specialty forest products. An advanced pre-conference agroforestry workshop focused on examples of people actively engaged in agroforestry in the United States and Canada and included discussion of constraints, opportunities and challenges of different agroforestry enterprises.

Ecology leader Neal helped facilitate the conference with event host ISU, several Iowa partners (including Trees Forever and private landowners) with multiple out-of-state partners through the Mid-American Agroforestry Working Group.

Extensive communications efforts and working groups were the most important elements of the ‘research into action’ agenda for the year. Among other Ecology Initiative activities, the Landscape Biomass team closed, and a new collaboration began with the Midwest Conservation Biomass Alliance.

**Ecology special projects**

**New**
“Does long-term use of cover crops affect soil health and quality as measured by the Haney Soil Test?” A lack of perceptible change to soil properties in soils under cover crop might be related to the choice of soil test. Seven farmers in a long-term cover-crop study are participating in a trial using the Haney test, a novel soil test that assesses soil microbial activity (soil health) and soil carbon, nitrogen and organic matter concentration (soil quality). PIs are S. Carlson, Midwest Cover Crops Research Coordinator and S. Gailans, Practical Farmers of Iowa.

**Completed**
“Simple and Fast Detection of *E. coli* in Agricultural Water Sources and Runoff” Researchers were attempting to advance water quality monitoring with development of a low-cost, paper-based device for detecting water-borne pathogen indicators (such as *E. coli*). They accomplished the first step to show that bacteriophages and chemicals can separately detect bacteria on paper. They will use that data as leverage for new funds to combine the two processes in a simple test. R. Cademartiri, ISU chemical and biological engineering and materials science and engineering and M. Soupir, ISU agricultural and biosystems engineering, conducted the project.
The Marketing and Food Systems Initiative (MFSI) was directed by Craig Chase with support from the nimble and enthusiastic Local Foods Team of Corry Bregendahl, Arlene Enderton, Lynn Heuss, Ahna Kruzic, Courtney Long, Savanna Lyons and Alice Topaloff.

Among the key efforts during the year were working in tandem with the initiative’s competitive grants program; developing and administrating mini-grants; creating professional development and collaborative opportunities for the Regional Food Systems Working Group (RFSWG), the Iowa Food System Working Group (IFSWG), the Iowa Food Hub Managers Working Group (IFHMWG) and the Food Access and Health Collaborative (FAHC); and further connecting local citizens and organizations through small grant projects and outreach.

The Local Foods Team developed a strategic plan for engaging in successful local foods work in Iowa. Their plan identified four core areas that will be emphasized over the next one to three years: beginning farmers (curriculum development, incubator farms, mentor programs, prison farms); community development (community capacity building, agricultural urbanism toolkit, food health and access, farm to school programming, FoodCorps); economic development (food processing, food hub business development, farmer profitability); and evaluation (conducting evaluations and evaluation capacity building). The marketing initiative funded competitive grant projects in each of the four core areas during the past year.

**MFSI mini-grant**

One non-competitive mini-grant was approved in FY2015. Healthy Harvest of North Iowa requested funds to develop a producer survey to assess producer capacity, develop an inventory of on-farm structures, and interest in food aggregation efforts. The one-year grant request was for just over $4,000.

**Memberships and sponsorships**

Since 2013, the Leopold Center has been an active member of the Sustainable Agriculture Food Systems Funders (SAFSF). The group is “an international network of grantmakers that works to foster communication, shared learning and information exchange about issues connected to sustainable agriculture and food systems.” Craig Chase has served on several planning committees since 2013 and Corry Bregendahl has presented at one of the annual conferences. Because of the relationships built through these activities, the Local Foods Team has received more than $100,000 in grants from other SAFSF members.

The LCSA became a sponsor for the *Journal of Agriculture, Food Systems and Community Development* (JAFSCD) in 2013. According to the organizers: “The Food Systems Journal was founded in 2010 to fill the gap in the applied research literature on farming and food systems-based community development, such as regional food value chains, urban food systems, farmland protection, and food sovereignty. The journal focuses on public policy, research, and practice in food systems work, and emphasizes ‘accessible scholarship’ that maximizes its usefulness in the transdisciplinary field of food systems.”

The North American Food System Network (NAFSN) is closely connected to JAFSCD. NAFSN is intended to serve as a professional development network and provide a training platform and/or certification process for local food system practitioners. The Leopold Center and ISU Extension and Outreach are working with NAFSN to further development of a national certification program.