

**Leopold Center Projects (1996-2015)  
Listed by Topic**



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**Topics:**

Agroecology/ecosystems  
Communities  
Crop management/systems  
Ecology initiative  
Education  
Grazing/forage management  
Integrated pest management  
Livestock management/systems  
Marketing and food systems initiative  
Nutrient management  
Pest management  
Policy initiative  
Soil and water quality

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Agroecology/ecosystems

**Agronomic, ecological and economic performance of alternative biomass cropping systems, 2013, #E2008-24**

**Abstract:** If cellulosic biomass is to play a significant role in America's energy future, research needs to be conducted on the optimal production and placement practices. This project looked at a portfolio of biomass cropping systems that might be adopted in Iowa.

**Assessment of woody biomass as a niche feedstock for bio-based products in Iowa, 2012, #E2009-26**

**Abstract:** This project carried out an assessment of the appropriate ecological, economic, technological, and social scaling factors of Iowa woody biomass resources to inform public policy initiatives as well as public and private investments in this valuable resource.

**Biochar and managed perennial ecosystems: Testing for synergy in ecosystem function and biodiversity, 2015, E2011-03**

**Abstract:** The researchers conducted a quantitative review and series of field experiments examining the effects of biochar on multiple ecosystem functions, such as plant productivity and soil nutrients. They found that biochar generally has neutral to positive effects on ecosystem function. However, there are other biochar effects still in need of research.

**Bird nesting on rotationally grazed warm- and cool-season grass paddocks in southern Iowa, 2008, # E2006-05**

**Abstract:** Bird nesting patterns were studied under various grazing regimes in southern Iowa. Farming in Iowa can be compatible with successful grassland bird populations IF there are areas that are undisturbed during the grassland bird nesting season (particularly May and June) and the grazing lands are diverse, both in terms of species (warm-season grasses, cool-season grasses, a variety of forb species including legumes and composites) and in structure (some bare ground, clumps of tall dead standing grasses, etc.).

**Blurring the lines between working and conservation lands: Bird use of prairie strips in row-cropped watersheds, 2014, # E2011-20**

**Abstract:** Information collected for this project, along with additional research conducted on the STRIPS project, showed that prairie strips can be a valuable tool for improving ecosystem health in agricultural lands, especially in terms of improving water quality and increasing biodiversity and landscape heterogeneity.

**“Cultivating” conservation: Bringing ecology, economics, and ethics together, 2015, #XP2013-10**

**Abstract:** Most current modeling frameworks have a limited view when gauging the response of an agroecosystem to different stressors. They tend to focus individually on either productivity in terms of crop yield, or profit, in terms of net income. However, if the framework does not include a means to assess the overall health of the agroecosystem, it will provide only a short-range sense of food security. The current practices may initially provide a spike in yield or income, but they also may mask the slow but ongoing degradation of the soil.

**Ecology and restoration of farmland woods in central Iowa, 2001, #98-21**

**Abstract:** The researchers studied the distribution and abundance of the plant species of farmland woodlots in central Iowa, with particular emphasis on the differences in species composition between sites currently or recently grazed by cattle versus those that had not been grazed for more than 50 years. In addition, various attributes of common species and less common (restricted) species were compared.

**Effects of transgenic *Bacillus thuringiensis* (Bt) corn pollen on the monarch butterfly, *Danaus plexippus*, 2003, #01-58**

**Abstract:** Transgenic Bt corn has been widely planted in Iowa. This study considered whether plant tissues released by Bt corn (pollen and anthers) have an effect on monarch butterfly larvae.

**The effects of transgenic soybeans and associated herbicide treatment upon soil-surface mesofauna, 2001, #99-29**

**Abstract:** While the percentage of transgenic soybean varieties being planted in Iowa has increased greatly, little has been done to evaluate the ecological consequences of these new technologies. Investigators examined the possible effects of three of these transgenic varieties and their associated broad-spectrum herbicides on soil-surface mesofauna, specifically springtails.

**Exploring the role of multifunctional agriculture on the future of agriculture and rural development, 2013, #XP2010-03**

**Abstract:** The goal of this project was better understanding of the interplay between climate shifts and management practices as it affects soil organic matter (SOM) stocks in agricultural fields. Two advanced computer models were used to study this issue.

**Getting the most from Iowa's forests: Linking forest understory composition to stream water quality and enhancing nutrient capture in forest remnants in agricultural landscapes, 2013, #E2011-05**

**Abstract:** Investigators worked to identify and disseminate information to enhance riparian forest understory function through actions that reduce contaminant transport to surface waters and enhance terrestrial and aquatic biodiversity.

**Impacts to the land-water-human system of rural Iowa from high intensity continuous maize production, 2013, #EPSP 2008-01**

**Abstract:** Complementary studies from the reference Clear Creek (Iowa) watershed and nine typical watersheds are used to evaluate cropping practices and water quality.

**Incorporating native plant communities on farms for forage and wildlife, 1999, #96-74**

**Abstract:** Rotational grazing systems have potential to reduce soil loss and fossil fuel use, and may increase biodiversity by providing a wildlife habitat. Establishing native, warm-season plant communities based on the region's native tallgrass prairie ecosystem as part of a rotational grazing system would benefit graziers by offering higher drought tolerance and pasture production levels in the midsummer months.

**Increasing carbon sequestration of working prairie by reducing invasive species in a fire and grazing system, 2012, #E2010-16**

**Abstract:** The investigators looked at one method for curbing invasive species that limit carbon sequestration potential for tallgrass prairie stands. They also learned that grasslands dominated by either warm-season, cool-season, or mixed stands are likely equal in their carbon sequestration potential.

**Increasing the number of herbaceous species appropriate for restoration of nutrient capture by forest remnants in agricultural landscapes, 2015, #ESP2014-04**

**Abstract:** The researchers investigated methods for restoration of six forest herbaceous perennial species with potential for increasing nutrient capture and storage in degraded remnant forest systems in Iowa. They conducted common garden (greenhouse) and field planting experiments using local and non-local propagules.

**Integrating hunting and grazing—a southern Iowa investigation into management issues, 2005, #03-E6**

**Abstract:** Land resources in southern Iowa are limited, yet there is increased interest in both improved wildlife habitat and hunter access to these lands. The study looks at ways to achieve these goals without shortchanging area farmers.

**Integration of water, nutrient and carbon cycling under diverse annual/ perennial plant community systems in agricultural landscapes, 2015, #E2004-14**

**Abstract:** This study examined nutrient, water and carbon cycling processes and biodiversity patterns within replicated sub-watersheds that comprised different configurations of annual and perennial plant

communities, ranging from conventional row crops to mixed annual and perennial systems to reconstructed native plant communities.

**The Long-Term Agroecological Research (LTAR) experiment: Ecological benefits of organic crop rotations in terms of crop yields, soil quality, global climate change mitigation and economic performance, 2014, #XP2011-02**

**Abstract:** Work continues in Year 16 of a long-term experiment comparing organic and conventional crop rotations. Adverse weather conditions in 2013 affected the production and performance of several crops in the rotations being studied. As a consequence of extended wet weather in spring, poor stands, delayed weed management and subsequent high weed populations, organic soybean yields were 26 percent lower than 2012. Organic corn yields were, however, greater than conventional corn, even when re-planting occurred on June 8.

**The role of herbaceous woodland perennial diversity for improving nutrient uptake capacity of riparian areas, 2006, #E4-2004**

**Abstract:** This project investigated the roles of forest understory perennial plant communities in storing nutrients and preventing pollution of surface waters.

**Toxicity of pesticides adsorbed to suspended sediment to larval fish in the Cedar River, 2001, #98-80**

**Abstract:** How do suspended sediment and pesticides introduced into Iowa streams and rivers by erosion of agricultural soil affect warm water fish? This study looks at how chlorpyrifos, a widely used pesticide, and suspended sediment interact with each other in river water and their effects on the survival of larval walleye.

**Transitioning to ecologically functional production systems, 2014, #E2010-10**

**Abstract:** One gap in transitioning to ecologically beneficial farming practices is lack of understanding of how soils store carbon (C) and nitrogen (N) over the long term. Farmers need management practices for improving soil quality, increasing both belowground (live roots) and aboveground (live cover) biomass, increasing soil organic matter, and reducing greenhouse gas emissions. This project quantified root productivity, root decomposition, soil microbial dynamics, soil aggregation, and belowground C allocation in annual and perennial biomass cropping systems across multiple landscape positions.

**The value of filter strips for grassland bird communities, 2004, #02-24**

**Abstract:** Grassland birds may be attracted to filter strips for nesting. This project explores what qualities might be incorporated into filter strips to make them more effective as bird habitat and nesting sites.

**Wildlife use of terraces in Iowa row crop fields, 1999, #98-35**

**Abstract:** Terracing is a soil conservation practice that has been promoted throughout the Midwest since the Dust Bowl era. The benefits for controlling soil erosion are well documented, but the values to wildlife are much less clear. This study documented the numbers and species of birds and small mammals as well as the number of small mammal dens in southwest Iowa terraces.

## Communities

### **Alternative and horticulture crop education and marketing pilot project, 2002, #99-56**

**Abstract:** How do farmers embark on a new type of production system, such as for vegetable and horticultural crops? This project helped a group of southern Iowa farmers organize infrastructure and find markets for these crops outside the usual farmers markets.

### **Assessing the business development strengths and needs of women and Latino farmers in Iowa, 2011, #M2010-07**

**Abstract:** Women and Latino farmers were surveyed about their needs for materials to inform their farming enterprises and help make them economically successful. Researchers will use the findings to develop appropriate supporting materials.

### **Assessing the impact of instructors and students as transfer agents, 2000, #99-07**

**Abstract:** This project followed up with high school vocational agriculture teachers to see whether their students carried informational messages beyond the classroom. It also investigated whether the level of training the classroom instructor received on a particular topic had an impact on student retention and use of the message.

### **Building hope in the Heartland: A training program, 2001, special project**

**Abstract:** Funding was used to help sponsor a workshop, “Building Hope in the Heartland”, on March 14, 2000, in Dubuque, Iowa. Attendees included parish nurses, social workers, and pastoral counselors.

### **Community and economic regeneration through strengthening the local food economy, 2001, #98-13**

**Abstract:** The goal of this project was to work with institutional food buyers to explore and implement ways that would help them purchase a greater portion of their food supply from local/regional farmers and processors.

### **Community Guide to Agriculture (Johnson County), 2000, special project**

**Abstract:** More than 1,000 people have been reached through the various Johnson County “Community Guide to Agriculture” programs. Among the outreach efforts were workshops, displays, farm and farm business tours, and programs on Iowa City’s public cable channel.

### **Compensation of farm employees, 1999, #98-64**

**Abstract:** Iowa farm operators were surveyed to learn what type and level of compensation they paid to full-time employees in 1997. The average total compensation paid was \$26,914, of which 79 percent consisted of cash wages. Benefits accounted for 18 percent of the compensation, and bonuses and wages in kind amounted to 3 percent. Housing and insurance plans were the most significant benefits provided.

### **Determining the benefits of environmental improvements in pork production and their sustainability: A community-based study of Iowa’s pork industry, 1999, #97-52**

**Abstract:** What is a more sustainable environment worth to pork producers, neighbors, rural community residents, and pork consumers? Surveys and experimental auctions were used to gauge participants’ willingness to pay for pork products produced in systems with differing environmental improvements and/or impacts.

**Developing a local food system in association with business and industry, 2005, #02-67**

**Abstract:** A Maquoketa, Iowa, partnership was created to establish a demonstration for locally produced foods with a target market of employees at local businesses and industries.

**Establishing an Iowa Microenterprise Foundation, 2010, #M2008-28**

**Abstract:** An Iowa group was formed to offer funding and advice to small business entrepreneurs with a focus on local food enterprises.

**Establishment of a local food system in eastern Iowa, 2003, #00-26**

**Abstract:** Several strategies to enhance local food production and marketing were employed by the Johnson County Soil and Water Conservation District. Among them were a pilot project on institutional buying practices, a directory of local food products, planning of locally sourced “All-Iowa meals,” and other educational and outreach activities.

**Examining the potential for organic apple production—the Homestead Orchard Project, 2002, #99-22**

**Abstract:** Organic orchard management is not new. However, Midwest apple growers lack information and models on how to make their operations work well. This project tests various organic orchard management tools at an orchard operated by people with developmental disabilities.

**Experiential educational engagement with working groups and communities of practice, 2011, #M2009-18**

**Abstract:** Students in an ISU sustainable agriculture class worked with the Leopold Center’s Regional Food Systems Working Group on cementing ties with community food groups and enterprises.

**Field to Family Community Food Project, 1999, #98-75**

**Abstract:** Community-supported agriculture (CSA) is a local food system in which farmers provide fresh food, fiber, and related products directly to the consumers in their area. The Field to Family Community Food Project began in 1997 and was intended to support the Magic Beanstalk CSA project by forming partnerships with other local organizations such as churches, social service organizations, Iowa State University, and other community groups.

**Fostering healthy diets in children through vibrant school gardens, 2014, #M2013-01**

**Abstract:** Six Des Moines, Iowa, schools served as testing grounds for using school gardens as an educational, community-building, health-enhancing tool. Food Corps members worked with teachers, staff, students and parents to show how school gardens could enrich their existence.

**Institutional and commercial food service buyers’ perceptions of benefits and obstacles to purchase of locally grown and processed foods, 2003, #01-38**

**Abstract:** The three-phase project investigated several issues facing institutional and commercial food services related to purchasing of locally grown and processed food.

**An internship program to help institutional food buyers develop links to local farms in northeast Iowa, 2005, #01-A13**

**Abstract:** Iowa college interns worked with the UNI Local Food Project, food buyers, and farmers to improve local food purchasing processes.

**Involving new immigrants and minority youth in local food systems, 2013, #M2011-08**

**Abstract:** The project focused on building awareness of the social and cultural aspects of food and its origins among an audience of high school age immigrant youth. Latino students from three Iowa communities were involved in photography project experiences.

**Iowa immigrant and refugee incubator farm program, 2012, #M2011-13**

**Abstract:** A one-year planning grant was used by a Des Moines area group to plot the most effective ways to encourage and support refugee and immigrants interested in starting farm enterprises in the region around Des Moines.

**Iowa recreational property ownership: Identification, contact and social dynamics of multiple-use perennial land cover, 2010, #E2007-19**

**Abstract:** This research explored the opportunities for expanding the productive use of perennial landscapes in Iowa through expanded beef and dairy grazing on non-resident owned recreational lands.

**Latino farmers and local multicultural food and marketing systems, 2010, #M2008-27**

**Abstract:** Iowa needs a new generation of community-scale organic and sustainable farmers and market gardeners. Two different approaches were used in two communities with significant immigrant populations (Marshalltown and Denison) to assist these groups of farmers.

**Local food connections: From farms to restaurant, 2004, #02-29**

**Abstract:** A new resource manual and an existing food brokering project were supported by this grant to enhance Iowa's local food systems.

**Local food in every pot: Growing farmers in northeastern Iowa through public and private partnerships, 2014, #M2011-16**

**Abstract:** A group of north Iowa urban women who faced numerous life challenges learned about self-sufficiency through their joint efforts of planning, planting, growing and harvesting produce from a community garden.

**Local food producer website workshops, 2011, #M2008-19**

**Abstract:** The project aimed to help small producers and other local food businesses learn to use online tools to market their products and form stronger relationships with their customers.

**Making the connection—linking farms to HRIs, 2002, #00-67**

**Abstract:** Iowa farmers interested in selling their products locally wanted more information about the institutional-type markets for these foods so they could determine how to work with these markets.

**Meeting on-farm energy needs through conservation, efficiency and renewable energy, 2012, #XP2009-11**

**Abstract:** A working group centered on the demonstration and promotion of energy saving practices used in meetings, at field days and in mini-grants to communicate with farmers.

**Non-farmer's Guide to Agriculture (Polk County), 1999, #98-57**

**Abstract:** An educational program helped non-farmers better understand agriculture through presentations and farm tours. Approximately 850 people participated and reported that the program was an enlightening, worthwhile experience. Two focus groups were held to assess attitudes about land use and quality of life issues in the Des Moines metro area.

**Participatory ecology for ‘Agriculture of the Middle’: Developing tools and partnerships to bridge gaps among science, people and policy in landscape change, 2010, #E2006-20**

**Abstract:** Based on findings of this project, the adaptive landscape changes needed to significantly incorporate perennial vegetation strategies into Iowa’s Corn Belt-dominated agriculture are possible if a coordinated strategy of change is coupled across three scales: field/individual, landscape/community, and regional/institutional.

**Organic farming demonstration project—eastern Iowa, 2002, #99-21**

**Abstract:** On-farm demonstration sites were developed in Dubuque and Jackson Counties to show interested producers some of the proven organic farming practices that are available.

**Our rural supermarket: Locally grown foods project, 2002, Special project**

**Abstract:** Organizers in northwest Iowa wanted to encourage production and purchase of local food in their area.

**Rural regeneration through direct marketing of Audubon County meats, 2000, #98-12**

**Abstract:** Audubon County Family Farms direct-marketed their farm products through the downtown farmers market in Des Moines. In addition to selling their products, the farmers encouraged dialogue with urban consumers through personal interaction and educational activities.

**Some alternatives for multiple use land management in southern Iowa, 2004, #03-P1**

**Abstract:** Information was gathered by a conservation group to aid the Southern Iowa Development and Conservation Authority in creative planning for future land management.

**Squaw Creek watershed social assessment: Values, beliefs, and perceptions of water quality and landscape change, 2004, #03-E1**

**Abstract:** Selected residents of three central Iowa counties were surveyed to determine their thoughts and opinions on water quality issues in the Squaw Creek watershed basin.

**Sustainability and community food systems in four Iowa counties, 2004, #00-69**

**Abstract:** Four Iowa counties (Benton, Marshall, Audubon and Johnson) were studied to determine how local food systems had developed, prospered, or struggled in the face of challenges from globalization and industrialization.

**Together in tough times, 2001, special project**

**Abstract:** Four Iowa communities struggling with the changing face of agriculture and subsequent economic woes were chosen as the sites for community conversations about coping with in difficult circumstances.

**Toward a new Homestead Act: Designing a farmstead transfer and leasing program for high-value farming and farmstead preservation, 2011, #XP2010-02**

**Abstract:** Finding ways to make farming more accessible for would-be farmers involves working with existing landowners and potential tenants/buyers to educate both groups on the possibilities open to them. Surveys, focus groups and personal interviews were used to determine what tactics would be more effective in engaging both groups.

### **The University of Iowa Biomass Partnership Project, 2013, #XP2012-05**

**Abstract:** The Biomass Partnership Project assembled a large, skilled team of researchers to investigate the options and challenges of acquiring large quantities of biomass for co-firing at the University of Iowa in Iowa City.

### **Youth and conservation methods, 2000, #99-58**

**Abstract:** How to get young people interested in conservation and environmental preservation is a concern for educators and environmental groups. One possibility explored here was to encourage students to speak with people who are carrying out agricultural conservation practices and then try to summarize these ideas and experiences on a video.

## Crop management/systems

### **Agronomic, ecological and economic comparisons of conventional and low-external-input cropping systems, 2011, #E2007-09**

**Abstract:** Low-external-input cropping systems were compared to conventional practices over several years and under varying conditions. The results offer several potential options for farmers in times of rising fossil fuel costs.

### **Agronomic and environmental soil testing for phosphorus and threshold levels in soils, 2004, #01-11**

**Abstract:** Greater knowledge of soil phosphorus (P) is needed to develop application recommendations for Iowa farmers. This project provides more data on the topic by addressing both agronomic and water quality issues.

### **Black walnut cultivar performance, 2004, #02-01**

**Abstract:** Those interested in planting black walnuts have lacked information about the best cultivars available for planting in Iowa. This project initiated long-term studies of several varieties of black walnut trees to determine the best cultivars for Iowa growers.

### **Capturing indigenous knowledge of small grains production, 2015, XP2014-08**

**Abstract:** Many Iowa farmers lack the knowledge base to grow small grains successfully. This grant supported visits and interviews with farmers across Iowa during small grains field operations in 2014. The goal was to capture the *nuts and bolts* of small grains production in both conventional and organic systems to facilitate greater adoption of these sustainable systems.

### **Crop availability of phosphorus in beef manure, 2014, #E2010-13**

**Abstract:** This study provided the first assessment since the early 1970s of the availability of beef manure-based phosphorus (P) stores for crop fertilization.

### **Crop response to zinc as a micronutrient in Iowa, 2002, #00-04**

**Abstract:** How does corn respond to application of zinc fertilizer on various Iowa soils? How can zinc be applied more effectively using new technology that spreads fertilizer at varying rates? This project sought more information on corn grain yield responses to zinc applications within fields with varying soil characteristics.

**Developing permaculture techniques for increased production and profit in sustainable year-round agriculture for beginning farmers and ranchers in southwest Iowa, 2014, #M2011-05**

**Abstract:** The project participants researched, developed, tested and implemented technologies for year-round growing seasons designed to be viable under the growing conditions in southwest Iowa. High tunnels, alternative crops, vermiculture and collaborative producer groups were among the options tested.

**Development and implementation of cost-effective fertilization and tillage management alternatives for improving soil quality in corn-soybean rotations, 2001, #98-36**

**Abstract:** A variety of tillage and fertilization treatments for corn were tested in research settings and on producers' farms. Information generated would be used to recommend applications of various crop nutrients in an environmentally safe, cost-effective manner.

**Development of dormancy breaking mechanisms in eastern gamagrass, 2004, #01-19**

**Abstract:** Eastern gamagrass would be an excellent pasture grass, but producers have difficulty establishing a stand. Various techniques for solving the dormancy problems in eastern gamagrass were investigated and analyzed.

**Development of switchgrass as a viable agricultural commodity for farmers in southern Iowa, 2002, #98-14**

**Abstract:** The Chariton Valley Biomass Project involves transforming switchgrass into a cash energy crop for southern Iowa farmers. The Leopold Center provided funding for communication and education activities connected with the project.

**Development of switchgrass as a viable agricultural commodity for farmers in southern Iowa, 2004, #02-26**

**Abstract:** The Chariton Valley Biomass Project was aided by the Leopold Center's contribution to its education and outreach activities. The project aimed to inform Iowans about the potential for growing switchgrass for biomass energy purposes.

**Eastern gamagrass seed dormancy, 2000, #97-30**

**Abstract:** Eastern gamagrass has considerable value as a forage source and conservation aid, but can be very difficult to establish because its seed does not germinate easily, even with all the necessary environmental factors present. Understanding seed dormancy in eastern gamagrass is the major objective of this work.

**Economic analysis of variable rate management for corn and soybean systems, 2000, #97-48**

**Abstract:** What is the potential payoff for farmers moving from traditional whole-field management or integrated crop management to precision farming? Using computer models, the investigators sought to analyze how inputs can be applied at optimal rates variably across a field in order to match inputs with crop needs. Over the long term, only modest increases were shown in gross returns from these practices. However, gross returns for individual years can be substantial.

**Establishment and persistence of legumes on sites varying in aspect, landscape position, and soil type, 2000, #97-29**

**Abstract:** Most Iowa pastures display only a small variety of plant species, resulting in large seasonal and annual variations in pasture productivity. This project evaluated the causes for these variations in cool-season grass pastures and considered ways to improve diversity of legume species used for grazing.

**Evaluating canola (*Brassica napus*) as an alternative oilseed crop and enhancing winter cover in Iowa, 2015, E2009-21**

**Abstract:** The viability of canola and winter cover crops as alternative ‘third’ crops in Iowa were studied. Though the alternative cropping systems were not as competitive on a production or economic basis, they did show tremendous promise in terms of reducing the potential for soil erosion and the leaching of nutrients into the water.

**Evaluating perennial crop options for inclusion in agroforestry systems, 2014, #E2013-18**

**Abstract:** The challenges and opportunities, including financial returns, were studied 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.

**Evaluation of forage plants collected from permanent pastures throughout Iowa, 2001, #98-69**

**Abstract:** There has been no collection of forage plant germplasm in Iowa for more than 50 years. Researchers collected and evaluated several types of plants in Iowa pastures to see if they had traits associated with grazing tolerance or, on a larger scale, with long-term pasture persistence.

**Evaluation of interactions within a shelterbelt ecosystem, 1997, #93-04**

**Abstract:** A tree shelterbelt comprised of four rows of hybrid poplars was established near Ogden, Iowa, in 1992 to evaluate shelterbelt characteristics and impacts on soil water content and crop growth and yield. Major emphasis was on testing corn and soybeans. The first three years saw few effects from the shelterbelt, and data from these years will be used to develop a baseline for future measurements. In the fourth and fifth years, corn yield patterns suggested that the shelterbelt increases yields in the zone leeward from the shelterbelt. Soybeans have not shown a response to presence of the shelterbelt.

**Evaluation of interactions within a shelterbelt agroecosystem, 2000, #97-53**

**Abstract:** Yield data for corn (eight years) and soybeans (six years) were collected and analyzed to determine the impacts of a hybrid poplar shelterbelt on crop production on a central Iowa farm.

**Evaluation of organic soil amendments for certified organic vegetable and herb production, 2002, #99-50**

**Abstract:** Responding to increased interest from the state’s organic farmers, this study analyzed some of the natural soil amendment/fertilizer products used in the production of organic vegetables and herbs. Using on-farm and university research sites, yield and post-harvest quality of peppers, three herbs, and broccoli were assessed.

**Evaluation of three cropping systems grown under the influence of a shelterbelt, 2001, #98-26**

**Abstract:** Shelterbelts have the potential to influence growth and yield from various cropping systems. On-farm tests were conducted to determine how shelterbelts interacted with corn, corn/soybean, and strip intercropping.

**Feasibility of organic soybean production following CRP land, 2002, #99-49**

**Abstract:** What is the potential for organic crops on land returning to production after being idled in a conservation program? On-farm demonstrations explored the effects of different tillage methods, weed control efforts, and cropping systems on organic soybean growth.

**Feasibility of unheated large gutter-connect greenhouses for winter organic vegetable production in Iowa, 2011, #E2009-24**

**Abstract:** The researcher compared air and soil temperature dynamics, as well as growth and yield of crops in small hoop and large greenhouses, and evaluated the effects on temperature and crop performance of different row covers and row cover management.

**Genetic diversity and performance of oat variety blends, 2001, #00-50**

**Abstract:** Iowa farmers who typically use a two-crop (corn/soybean) rotation could benefit from adding a third crop to reduce weed and pathogen problems, while improving soil quality. Oat is one of the most common alternative crop in Iowa, but has been hindered by unreliable yields. The potential performance increase in oat variety blends over pure-live varieties was investigated.

**The impact of biodiversity services in row crop production in annual versus perennial landscapes, 2011, #E2006-13**

**Abstract:** Researchers studied the behavior of soybean aphids in fields and prairies, and the implications for biological control of these pests.

**Impacts of conventional and diversified rotation systems on crop yields, profitability, soil functions, and environmental quality, 2013, #2010-02**

**Abstract:** New questions and technologies are considered in a long-running ISU crop rotations study. The results continue to show remarkable adaptability exhibited by rotations that are more diverse and spread out over longer periods of time.

**Impacts of conventional and diversified rotation systems on crop yields, profitability, soil functions, and environmental quality: Stage II, 2015, #XP2013-01 and #XP2014-01**

**Abstract:** Research continued at a long-term crop rotation testing site near Boone, Iowa. In this stage of the trial, attention was directed to estimating soil erosion with the RUSLE2 model, measuring soil nitrogen transformations and nitrogen uptake by corn, and assessing the farm economics of these more varied crop production scenarios using enterprise budgeting techniques.

**Improving farm nutrient management by optimizing organic matter inputs and root health, 2005, #02-41**

**Abstract:** Farmer cooperators conducted strip trials to help investigators create a nutrient and organic matter budgeting system that offered whole farm management guidelines to tighten nitrogen budgets for corn. Corn root health also was analyzed.

**Improving productivity of warm-season pastures by inter-seeding legumes, 2004, #01-35**

**Abstract:** The dynamics of warm-season grass and legume plant communities are affected by grazing landscape and soil type. This project explored how these factors could be managed by western Iowa farmers to successfully establish higher-quality summer pastures comprised of warm-season grass/legume mixtures.

**Improving tree establishment with forage crops, 2002, #99-85**

**Abstract:** Weed competition and economics are two common barriers to Iowa farmers investing in tree plantings. This project examined seven weed control strategies and investigated productivity of small grain/forage combinations raised with trees in an effort to suggest management options that would encourage tree planting in the state.

**Integrated soil and weed management production systems for perennial food crops, 2010, #E2006-12**

**Abstract:** Several alternative weed management tactics were tested for their effects on weed control, crop yield and soil quality enhancement for strawberry and grape production.

**Iowa location of pawpaw regional trials, 2003, #00-20**

**Abstract:** The goal of this three-year project was to establish the pawpaw trees and bring them to fruiting stage. This was part of a long-term effort to evaluate the potential for an Iowa pawpaw tree fruit crop.

**Local ecotype prairie seed—an alternative agricultural product for increasing the viability of smaller farming operations, 2003, #99-45**

**Abstract:** What is the potential for a “prairie truck farm” in Iowa? Investigators tried to determine if it was feasible to establish diverse production plots around the state, with seeds being collected and produced locally, and used as an alternative crop for farmers.

**New strategies to enhance the sustainability of apple orchards, 2010, #E2006-04**

**Abstract:** Three years of experiments were conducted for apple growers to help increase profit margins, cope with new regulations on pesticide use, and deal with increased pesticide resistance by major apple pests and diseases.

**Optimizing legume establishment in winter cereal grains, 2011, # E2006-10**

**Abstract:** Project investigators sought to determine the resiliency of the winter cereal legume intercrop system in relation to agronomic management and to try to predict legume establishment.

**Pawpaw trial maintenance, 2008, # E2004-23**

**Abstract:** Field trials were conducted to determine if the pawpaw could serve as a successful alternative crop for farmers in the central U.S. The pawpaw can be grown in the upper Midwest to fruiting stage.

**Performance of cropping systems designed to reduce nitrate leaching into shallow municipal well aquifers, 2015 #2009-22**

**Abstract:** This on-farm experiment tested five different cropping systems with the potential to improve nitrate (N) management in the capture zones of community water supplies in the upper Midwest. Residual soil N concentrations were determined for each system in order to estimate the likelihood of N leaching from the system. An economic analysis also was conducted.

**A simple method to increase alfalfa yields in the establishment year, 2001, #00-47**

**Abstract:** Any practice that would improve alfalfa’s profitability could increase its use by producers. The method tested in this study—mixing seed of non-dormant and dormant cultivars at planting—is simple, and could improve traditionally poor yields during the establishment year.

**Small grain and annual forage legume intercrops for Iowa, 2001, #98-68**

**Abstract:** Current cropping practices in Iowa have reduced diversity in crop production to predominantly corn and soybean. Low prices, weed and pest control problems and erosion have plagued these monoculture cropping systems. Small grains and forages represent potentially viable alternative crops to corn and soybean in Iowa. Producers could opt for an annual intercrop that provides grain and forage without taking land out of corn and soybean for more than one year. This project tested the possibilities for combining small grains with a forage crop for a one-year intercrop.

**Soil quality, yield stability, and economic attributes of alternative crop rotations, 2001, #98-05**

**Abstract:** Three long-term rotational crop studies in Iowa and one in Wisconsin were examined for conclusive evidence of rotational effects on soil quality. Long-term yield data also were evaluated to determine if there was a quantifiable relationship between soil quality and yield or yield stability.

**Suitability of winter canola (*Brassica napus*) for enhancing summer annual crop rotations in Iowa, 2015, #E2013-16**

**Abstract:** Winter canola shows promise as an addition to crop rotations in Iowa. This project determined optimal seeding dates for this cover crop and explored practices to enhance production. It was estimated that the latest Iowa seeding date varies from around August 31 in the north to September 12 in the southeast.

**Suitability of winter canola (*Brassica napus*) for enhancing summer annual crop rotations in Iowa II: Economic analysis, 2015, #XP2014-02**

**Abstract:** What are the prospects for winter canola as an alternative crop for Iowa farmers? This project examined the economics and costs/benefits of adding canola as a third crop or a cover crop in rotations.

**Sustainable grape production for the reestablishment of Iowa's grape industry, 2005, #02-46**

**Abstract:** Reviving the grape industry in Iowa requires development of improved sustainable production systems. This project used research, demonstration, and information transfer to educate and assist new and established Iowa grape growers.

**Systems model and prototype development to capture and use rainwater runoff from a high tunnel, 2012, #E2011-14**

**Abstract:** High tunnels offer opportunities for farmers to increase production of seasonal horticultural crops. Because of the tunnel roof design, rainfall poses challenges of drainage, erosion and runoff. This project investigates a system for catching and collecting the rainwater for future use in irrigation.

**Tunnels to tables: High tunnel production and distribution model for produce, 2010, #M2007-05**

**Abstract:** High tunnel facilities offer a production alternative for specialty crop farmers, but also require a new set of management skills and tactics.

**Understanding microbial contributions to soil aggregation and organic matter accumulation, 2015, #E2014-19**

**Abstract:** The goal of the project investigators was to characterize soil bacterial and fungal communities and the rates at which they break down specific plant-derived carbon (C) molecules within soil aggregates in three farming systems.

**What drives corn yield stability?, 2014, #2011-07**

**Abstract:** The links between nitrogen fertilizer rates and varying crop rotation schemes are examined in this project. The role that organic matter inputs play in supporting corn-soybean rotations also was investigated.

**Winter grazing of corn residues: Effects on soil properties and subsequent crop yields from a corn-soybean crop rotation, 2004, #00-35**

**Abstract:** Corn residues could be a good resource for winter cattle grazing. The study investigates whether winter grazing causes soil compaction and yield reduction in crops that are planted following grazing.

## Ecology initiative

### **Assessing soil quality impacts after conversion of marginal cropland to productive conservation, 2009, #E2006-17**

**Abstract:** Planting trees on poor quality cropland may yield some benefits for increasing soil organic carbon. Test plots in four parts of Iowa were examined to determine the level of benefits possible to achieve.

### **Assessment of triticale varieties for swine feeding performance and tolerance to late planting, 2007, #E27-2004**

**Abstract:** Triticale holds potential as a third grain crop in Iowa. This project studied different cultivars to assess their suitability for production and use as swine feed.

### **Comparison of Biofuel Systems (COBS) project biomass energy conversion and energy return on investment analyses for 2012 growing season, 2014, #E2013-04**

**Abstract:** From 2009-2012 the COBS team used a standard method to estimate carbohydrates in the biomass harvested from the biofuel systems in order to determine the cellulosic yields. This project performed the same analysis for 2012 harvested biomass, and further analyzed biomass from 2009-2012 using a method that is less commonly used due to its expense, but is much more accurate.

### **Devising a framework for implementing cattle-grazing and fire as management tools on grassland reserves in southern Iowa, 2007, #E18-2006**

**Abstract:** Grassland preservation practices such as grazing and use of fire are studied in southern Iowa and northern Missouri.

### **Economically optimal enterprise mix for Iowa farms, 2006, #E1-2004**

**Abstract:** FARMOR, a computer simulation program developed by this project, will allow producers to make calculations about the best mix of enterprises for their unique farm operation.

### **Economically sustainable riparian buffer to promote bank stability and reduce gully erosion and phosphorus runoff in the Loess Hills, 2007, #E30-2002**

**Abstract:** The project considered what types and configurations of vegetative buffers might be effective in slowing soil loss at a Loess Hills site.

### **Effects of biomass harvest on soil erosion, 2009, #E2003-07**

**Abstract:** The Water Erosion Prediction Project (WEPP) model was used to estimate the effects that harvesting corn residue would have on soil erosion. The erosion at different crop residue removal rates was compared on different soils and on different slopes.

### **Establishment of a field school for weed ecology and management, 2009, #E2004-06**

**Abstract:** Multiyear field experiments using three crop rotations, two of which were low-external-input (LEI) systems, showed that cropping systems can be designed to achieve large reductions in agrichemical use while providing effective weed control and high yields and profits.

### **Evaluating denitrifying bioreactors for edge-of-field nitrogen management in Iowa's tile-drained landscapes, 2012, #E2009-11**

**Abstract:** Bioreactors show significant potential for removing nitrate from Iowa's drained fields. The investigators tested the design and management of bioreactors to see what factors can make the

bioreactors operate most efficiently, and how that performance compares to other drainage water quality improvement practices.

**Integrating hunting and grazing: Loess Hills and south central Iowa on-farm management experiences, 2008, #E2004-43**

**Abstract:** The project intended to monitor bird use of rotationally grazed pastures over two summer growing seasons, but the investigator was unable to complete the work.

**The landowners' decision: Grazing and fire as management tools on Iowa grasslands and oak savannas, 2011, #E2007-05**

**Abstract:** Surveys were used to examine landowner attitudes, perceptions and knowledge of fire as a management tool for controlling invasive species and enhancing conditions for native plants and animals on recreational and productive agricultural lands.

**Native cover crops and timing of planting: Effects on  $^{15}\text{N}$  uptake, weed invasion and prairie establishment, 2009, #E2006-11**

**Abstract:** Cover crops have been used for several purposes in prairie restorations. This project looked at whether the assumed benefits are supported by research results.

**Optimizing buffer strips for improved ecosystem services, 2012, #E2009-09**

**Abstract:** The project objective is to enhance delivery of insect-derived ecosystem services provided by perennial buffers through a strategy of combining research and outreach.

**The role of herbaceous woodland perennial diversity for improving nutrient uptake of riparian areas—Phase II, 2009, #E2006-03**

**Abstract:** Investigation of disturbed and intact woodlands' herbaceous understories provided information on species present, biomass production and nutrient capture in preserved and secondary forests.

**Soil moisture dynamics and plant transpiration under contrasting annual-perennial cover types, 2012, #E2008-17**

**Abstract:** Soil moisture dynamics are influenced by land cover, thus different land covers would be expected to have different soil moisture behavior. This project tested various land covers and crops to see whether and how moisture was retained or depleted.

**Using the past to plan for the future: Retrospective assessment of landscape and land use change in the Clear Creek Watershed, 2007, #E38-2004**

**Abstract:** Using aerial photos and historical records allowed researchers to create a compelling picture of the changes in the Clear Creek watershed since 1940.

**Whiterock Conservancy baseline data project, 2008, #ESP2006-04**

**Abstract:** Baseline surveys of pasture diversity and bird populations were conducted and will be used to help inform conservation-based land management decisions at the Whiterock Conservancy in southwest Iowa.

## Education

### **Biological control and sustainable horticulture principles for Iowa's vocational agriculture curriculum, 2001, #98-24**

**Abstract:** Instructional materials on biological control and sustainable horticulture principles were developed for use by teachers and students in the vocational agriculture programs in Iowa's high schools and community colleges. Students received instruction on various alternative horticultural production practices. Instructors received biological control kits for their classroom use.

### **Building social networks to capture synergies in wood-based energy production and invasive pest migration, 2014, #XP2011-07**

**Abstract:** This project makes a variety of policy recommendations for cities and the private sector to help deal with the consequences of emerald ash borer infestations.

### **Closing the loop, expanding the circle: Educational outreach for institutional food waste on small farms, 2002, Special project**

**Abstract:** This project increased the awareness of summer camp visitors about alternatives to using public landfill facilities for disposing of food waste.

### **A decision-making tool for the University of Iowa Biomass Partnership Project, 2015, #XP2014-05**

**Abstract:** Work continued on a plan to increase the renewable, sustainable fuel sources available to power operations at the University of Iowa in Iowa City. A team of researchers from multiple institutions collaborated to create a tool that would allow the UI to evaluate its alternative energy options more effectively.

### **Farmer perspectives on ecosystems service management, land use targeting and the future of Cornbelt agriculture, 2014, #E2011-15**

**Abstract:** The development and use of targeted conservation practices was the subject of modeling, interviews and support tools researched by the project investigators.

### **Everything you wanted to know about wildlife and fisheries: A field day for agriculturists, 1998, #96-20**

**Abstract:** Previous wildlife-related field days sponsored by the Leopold Center and ISU Extension were successful, but mainly attracted traditional members of the sustainable agriculture and wildlife interest groups. This project sought to move beyond those boundaries to reach agribusiness and commodity groups that might not ordinarily be the recipients of an environmentally focused message.

### **Increasing Iowa farmers' resiliency through the Practical Farmers of Iowa Cooperators' Program, 2014, #XP2011-11**

**Abstract:** Practical Farmers of Iowa uses their Cooperators Program to engage farmers in answering their research questions with demonstrations on their own farms. They share what they learn at field days, and through publications and webinars.

### **Increasing visibility of energy conservation and renewable energy on Iowa's small- to mid-sized farms, 2014, #XP2013-03**

**Abstract:** The Farm Energy Working Group (FEWG) provides a one-stop shop for information and expertise on meeting on-farm energy needs. FEWG has increased communication among individuals and organizations interested in on-farm energy, including farmers, utility representatives, policy organizations,

Extension Service, higher education institutions, U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), farm organizations and renewable energy businesses.

**Investigating opportunities for enhancing farmer adoption of strategically targeted prairie strips in Iowa, 2013, #E2012-08**

**Abstract:** Researchers on this one-year planning grant interviewed a range of Iowa citizens and looked for ways to encourage more farmers and stakeholders to consider adopting prairie strips as a targeted conservation practice.

**Iowa Farm Energy Working Group, 2013, #XP2011-03**

**Abstract:** In continuing work, the funding for Years 3 and 4 of the Farm Energy Working Group served to expand outreach and education about on-farm energy reductions for smaller operators.

**Iowa Master Conservationist Program, 2002, Special project**

**Abstract:** A county-level Master Conservationist Program educated many Iowans about conservation and sustainability in exchange for the participants volunteering both time and expertise to their communities.

**Metered energy analyses: Getting baseline data, ground-truthing changes, 2014, #XP2012-06**

**Abstract:** The Farm Metered Energy Analysis project was conducted to help farmers learn about their energy use patterns. The metered energy data was reported to the farmers in a variety of formats such as average monthly kWh usage by type of fuel, average cost of energy per kWh over time, etc.

**Micro-Farming: Reducing rural and urban food deserts through job training, 2013, #M2013-13**

**Abstract:** A community college sustainability coordinator formulated a continuing education course to educate aspiring farmers about all aspects of producing and marketing local foods in southwest Iowa. The course curriculum was shared with other Iowa community colleges.

**On-line learning: Using webinars to teach about succession and enterprise development issues, 2010, #XP2009-02**

**Abstract:** Iowa State University's Beginning Farmer Center and Practical Farmers of Iowa teamed up to broadcast eight webinars to assist current and beginning farmers in devising strategies for successful farm enterprises.

**Statewide manure management education initiative, 2001, #98-51**

**Abstract:** After manure management was identified as a high priority issue for programming, ISU Extension launched a statewide initiative that made education and individualized assistance on manure nutrient management available to crop and livestock producers in every Iowa county. The initiative involved educational workshops for producers as well as on-farm demonstrations and increased publicity concerning the economic and environmental value of managing manure nutrients for crop production.

**Sustainable and entrepreneurial agriculture program at Marshalltown Community College, 2006, #MSP07-2004**

**Abstract:** Marshalltown Community College used a challenge grant from the Leopold Center to establish a sustainable agriculture curriculum/training program.

## Grazing/forage management

### **Animal and plant responses for steers grazing switchgrass and big bluestem pasture, 1997, #93-06**

**Abstract:** Native warm-season grasses can provide large amounts of high-quality forage during the midsummer months. Maximum potential benefits depend on management of the entire cool- and warm-season grazing system. This study compared two grazing systems for the warm-season pasture. Fall-born steers grazed pastures of Cave-in-Rock switchgrass or Roundtree big bluestem over three years using either continuous or rotational grazing systems. Pasture carrying time for switchgrass and bluestem pastures and steer weight gain were considerably higher for the rotational grazing program than for the continuous grazing system.

### **Collection of forage crop germplasm throughout Iowa, 1998, #97-38**

**Abstract:** A successful forage breeding program starts with a supply of germplasm containing adequate genetic diversity to serve as the foundation for better cultivars. No collection of forage breeding materials unique to Iowa has been done in 50 years. In this project, plants were collected from 20 pastures throughout the state. The plants' mere presence suggested that they had already survived the drought, cold temperatures, and extensive grazing that occur in Iowa, which made them good subjects for breeding purposes.

### **Complementary grazing systems for beef cattle production, 2004, #00-06**

**Abstract:** Pasture productivity in Iowa often is limited by the low yield of cool-season grasses in the summer. This project considers whether uneven seasonal distribution in pastures could be improved by including species that perform better under higher temperatures.

### **The complex role of tall fescue in grassland ecology, 2015, #E2012-01**

**Abstract:** Tall fescue invasion of grazing land is an increasing concern due to its association with a fungal endophyte that can produce compounds toxic to livestock and wildlife. The project compared patch-burn grazing as a management tool relative to complete pasture burning in tall fescue-invaded pastures.

### **Custom grazing contracts: successful models to grow profit, avoid pitfalls, 2011, #E2007-11**

**Abstract:** After conducting interviews with 43 Iowa graziers, the investigators developed fact sheets and a checklist to help other graziers make their operations more effective.

### **Defining the grazing season of restored natural grasslands, 2012, #E2011-19**

**Abstract:** Grazing native plants is common in the western United States, but the limited amounts of grazing land in Iowa are dominated by exotic, cool-season grasses and legumes. This study explored the nutritional quality and yields of reconstructed native plant grassland and prairies.

### **Demonstration of an annual forage crop integrated with crop and livestock enterprises, 1998, #95-49**

**Abstract:** Using a more diverse cropping system, such as strip intercropping, to produce forages for feeding livestock can create a more sustainable, environmentally friendly farming system. Strip intercropping of corn, soybeans, and oats under-seeded with berseem clover was used to demonstrate agronomic and environmental benefits of a more varied cropping system. This system produces oatberseem clover soilage (green-chop) that can be utilized to feed beef cattle.

**Demonstration and technology transfer to producers implementing sustainable rotational grazing systems, 2003, #01-02**

**Abstract:** All rotational grazing systems require fences, water, and forages. This project used hands-on demonstrations to show producers some of the options available for each of these components of a successful grazing system.

**Determination of early summer pasture conditions to optimize forage and calf productivity and profitability, 2000, #97-20**

**Abstract:** Forages can be valuable elements in a sustainable production system. The date when animals are first allowed to graze on pastures can impact the quality and amount of forages available. This study explored various factors that influence successful grazing.

**Development and implementation of low-input delivery systems for ethanol co-products in forage-based systems, 2010, #2006-12**

**Abstract:** Increased corn production to fuel Iowa's ethanol plants leads to diversion of cattle pasture land to cropland. This project looked at the value of using distillers' grain (an ethanol by-product) as a supplement for beef cattle feeding in a forage system.

**Education-demonstration for intensive grazing and forage management on highly erodible land, 1998, #96-41**

**Abstract:** The wise use of highly erodible land (HEL) is an important economic and environmental issue. Rotational grazing for livestock is one method of land use improvement suitable for HEL or other cropland that needs to be converted to pasture. Using an existing demonstration farm in Adams County, various paddock arrangements and forage varieties were tested to help farmers devise appropriate sustainable grazing systems.

**Enhancing botanical composition, wildlife habitat, and carbon sequestration of pastures in south central Iowa through soil disturbance by mob grazing of beef cattle, 2015, #E2011-06**

**Abstract:** As Iowa pastures continue to be dominated by cool-season grass species, strategic integration of a single mob-grazing event into pasture management offers a tool to simultaneously increase productivity of pastures and to improve grassland wildlife habitat through increased biodiversity. However, the success of the maneuver depends on climate, soil and landscape.

**Evaluating the adaptability of forage species and varieties in northwest Iowa, 2005, #99-41**

**Abstract:** Iowa's harsh climate can make forage establishment and maintenance difficult. This project examined which forages might be best adapted to growth and survival in northwest Iowa.

**Grass-based dairy and dairy networks/promotions, 2003, #01-32**

**Abstract:** What is the potential for grass-based dairying in southern Iowa? How can we help beginning farmers and others enter the dairying profession? Fifteen dairy operations participated in a study to answer these questions.

**Greenhorn grazing: A modular pasture and animal management curriculum for beginning and transitioning graziers, 2013, #E2009-14**

**Abstract:** Grazing livestock historically has been an important part of Iowa agriculture. With land and crop prices at all-time highs, grass-based enterprises are challenged to compete financially. This educational program was designed to help beginning and transitioning producers who want to establish economically and environmentally successful grazing operations.

**Incorporating grassland agriculture into row crop production systems, 2005, #02-39**

**Abstract:** This project explored ways to make grassland agriculture a more appealing option for Iowa producers who have marginal soils on their farms.

**Intensive rotational grazing management education-demonstration for Northeast Iowa dairy and beef producers, 1998, #96-38**

**Abstract:** Hay is a major crop for northeast Iowa cattle producers. The difficulty and cost of growing and harvesting quality hay and the continued pressure to reduce costs has stimulated producer interest in management of intensive grazing systems. This project offered Iowa farmers extensive, hands-on information and experience with intensive grazing techniques.

**Iowa Lakes Controlled Grazing, Inc. (ILCG) project, 2000, #95-13**

**Abstract:** Through the efforts of the Iowa Lakes Controlled Grazing, Inc. (ILCG) project, producers in four northwest Iowa counties learned more about how management intensive grazing and other alternative practices could be used to increase their profits and preserve environmental quality.

**Iowa Pasture Management Guide, 1998, #96-72**

**Abstract:** While there is a great deal of information available on pasture management and utilization, there is no one existing publication that could serve as a comprehensive source of advice on the subject for Iowa farmers. Using feedback from a focus group, a handbook for Iowa farmers to aid in pasture management has been prepared.

**Quantifying eastern redcedar in southern Iowa: A starting point for conversations with landowners about threats to grassland resilience, 2012, #E2011-13**

**Abstract:** The swift spread of eastern redcedar poses a number of problems for grasslands and wildlife habitats, which are already under strong pressure in the Midwest. This study documents the true nature of redcedar expansion in this area and uses that data to educate landowners about management practices aimed at slowing the spread of this pernicious woody species.

**Quantifying the role of riparian management to control nonpoint source pollution of pasture and cropland streams, 2009, #E2004-24**

**Abstract:** Grazing management practices have the potential to mitigate some problems with sediment and phosphorus loading in pasture streams. The project demonstrated possible strategies to lessen grazing impacts on streams.

**Site-specific implementation of practices that alter the spatial/temporal distribution of grazing cattle to improve water quality of pasture streams in the Rathbun Lake watershed, 2012, #E2009-08**

**Abstract:** This study examined how pasture size and composition can affect cattle distribution in and around streams and influence the risk of pollutants stemming from cattle congregating in a small area.

**Use of mob grazing to improve calf production, enhance legume establishment, and increase carbon sequestration in Iowa pastures, 2013, #E2010-13**

**Abstract:** Mob grazing is a variation on rotational grazing that has been proposed to have promise as one of the tactics graziers can use to improve cattle performance and environmental quality. This project looked at whether and how mob grazing could benefit livestock and producer management of their pastures and soil resources.

## Integrated pest management

### **Biologically intensive pest management: Iowa apple growers take the next step toward sustainability, 2001, #98-45**

**Abstract:** Iowa growers have made strides in decreasing chemical use in their apple production. However, demands of the marketplace and regulatory agencies mean that growers need to investigate ways to further reduce pesticide use, potentially through biologically intensive pest management.

### **Building an Integrated Pest Management network in cooperation with Iowa fruit and vegetable growers, 1997, #92-47**

**Abstract:** Fifty-one commercial growers of apples, strawberries, tomatoes, and/or watermelons cooperated with ISU Extension specialists in a three-year program to evaluate Integrated Pest Management (IPM) control techniques. Scouts and growers monitored pest infestations and diseases such as codling moth on apples, tarnished plant bugs on strawberries, and anthracnose on tomatoes and melons. Growers sprayed only when pest populations or disease risk values reached levels capable of doing crop damage. Weather conditions were monitored for periods favorable to pest outbreaks. On average, ISU researchers estimate that growers applied from 25 to 55 percent fewer insecticides and fungicide sprays (depending on the year and the particular pest) by using IPM methods in comparison to their usual practices. For the growers, this meant decreased input costs, a better bottom line, and enhanced competitiveness.

### **Reducing pesticide use in Iowa vineyards: Alternatives to herbicides for vineyard weed management, 2011, #E2008-18**

**Abstract:** Mulches can play a role in vineyard management. This project explored the optimum uses and practices for applying various mulches to grape agroecosystems.

### **Supporting Leopold Center IPM research through on-farm trials and demonstrations, 1997, #95-39**

**Abstract:** The efforts of the Leopold Center Integrated Pest Management (IPM) Issue Team were augmented and advanced through collaboration with the Practical Farmers of Iowa. Using a program of on-farm research, demonstrations, and farm field days, the project evaluated two methods that refine IPM by providing biological control options and/or more precise information about effective (as opposed to gross) pest infestation levels. Biological controls of alfalfa weevil and European corn borer were tested.

### **Transferring biological control technology to Iowa strawberry growers, 2001, #96-77**

**Abstract:** Growers receive nearly \$3.5 million gross income from strawberry production in Iowa. Substitution of environmentally friendly, natural products and biological controls for the current chemical-intensive growing approaches will be critical to the expansion of strawberry production in Iowa.

## Livestock management/systems

### **Alternative farrowing systems during cold weather, 2006, #E03-2003**

**Abstract:** The project investigators studied the performance of alternative farrowing systems during cold weather. These systems have the potential to expand the niche pork markets in Iowa by making larger supplies of marketable pork available in the summer months.

### **Alternative swine cost of production project, 2004, #PNMWG5-02**

**Abstract:** Pork producers interested in niche market production need information on the costs of alternative operations. Records from current niche producers were collected and analyzed.

**Beef cattle feeding in deep-bedded hoop barns, 2006, #SP1-2004**

**Abstract:** A low-cost, versatile bedded hoop barn for feeding cattle may help alleviate runoff and other environmental problems associated with open beef cattle feedlots while maintaining animal performance.

**Botanicals as part of an integrated value-added pork production system, 1999, #98-52**

**Abstract:** Selected herbs are known to naturally possess antibacterial and other characteristics that could be useful in animal protein production. Inclusion of these herbs in animal feeds as alternative growth promotion and efficiency stimulants may be able to address some of the current concerns about the possibility of significant antibiotic-resistant bacteria development that stems from drugs currently used at sub-therapeutic levels in animal production. Several herbs were tested for their ability to aid animal growth rates and feed efficiency without giving rise to antibiotic-resistant microbes.

**Botanicals as part of an integrated value-added pork production system, 2001, #00-37**

**Abstract:** Some herbs are known to exhibit natural antimicrobial activity and other characteristics that could be useful in value-added animal production. Four botanical products were tested for possible inclusion in swine feeds as alternatives to synthetic chemotherapeutic and antimicrobial agents.

**Chariton Valley Beef Initiative, 2002, #99-71**

**Abstract:** Chariton Valley Beef Industry Initiative (CVB) was started by producers seeking to improve their herd management skills and simultaneously look into value-added markets. Individualized computer analysis of past carcass data is a key product supplied to CVB members.

**Corn silage test plot to increase profitability for dairy farmers and reduce winter wind and water erosion, 2011, #E2009-02**

**Abstract:** This project looked at two ways to help dairy farmers—improvement of corn silage used in feeding their herds and adding a cover crop with potential for feed and erosion control.

**Coupling swine technologies: Swine system options, 2000, #97-31**

**Abstract:** Three major alternative swine production systems were researched and demonstrated at Iowa State University research farms: hoop structures at Allee Farm near Newell and Rhodes Farm near Rhodes, outdoor farrowing at the Western Farm near Castana, and a deep-bedded Swedish system at the Armstrong Farm near Lewis.

**Dairy manure quantification and characterization in grazing systems, 2001, #99-16**

**Abstract:** Information is needed on the amount and nutrient concentrations of manure generated by lactating dairy cows that are managed in an intensive grazing system. Currently, the most frequently cited data sources for these are 20-year old ASAE tables. These data are important because manure nutrient figures are used to determine the maximum animal stocking density that will safeguard against nutrient runoff or degradation of water quality by concentrated nutrients.

**Demonstrating farrowing alternatives for small farms: Insulated tents for sows and pigs, 2015, #XP2012-04**

**Abstract:** This project demonstrated that modifying a commercially available yurt kit for use as a farrowing facility is possible, but is likely to be cost-prohibitive for most farmers. Results from this project included a producer guide for crate-free farrowing.

**Demonstration of a Swedish sustainable swine production system in Iowa, 1998, #95-72**

**Abstract:** Many Iowa hog farmers are interested in alternative systems for producing pigs. This project demonstrated an approach to profitable pork production designed to be compatible with the pigs' natural

behaviors. It has been used successfully in Sweden, and was transplanted to Iowa with generally favorable results.

**Demonstration of swine carcass composting as part of an environmentally friendly production system, 2002, #00-33**

**Abstract:** Carcass composting is not a new technology, but it has excellent potential to be part of a swine production system that uses solid bedding.

**Distillers Dried Grains (DDG) feeding and impacts on meat quality for grazing steers, 2011, #ESP2006-03**

**Abstract:** This study suggests that pasture-reared cattle, when given access to soyhull/ DDG self-fed by-products, exhibit excellent responses on both live performance and carcass traits, including CLA fatty acid levels.

**Energy use and nutrient cycling in pig production systems, 2011, #E2008-03**

**Abstract:** Researchers explored all aspects of energy use in hog production from the perspective of two systems currently in use in Iowa—conventional confinement systems and bedded hoop barns.

**Evaluation of diatomaceous earth as an adjunct to sheep parasite control in organic farming, 1997, #95-34**

**Abstract:** Diatomaceous earth (DE) has been touted as a natural and effective way to control gastrointestinal (GI) parasites in sheep. In this study, grazing lambs were fed DE at 5 and 10 percent of a supplemental ration for periods from 66 to 117 days. Weight gains, hemoglobin, packed cell volume, fecal egg/gram counts, and abomasal GI larval counts were not different in controls vs. DE-fed lambs. DE by itself was not shown to be an effective parasite control agent, but could be used as part of a parasite control program.

**Evaluation of greenhouse gas emissions from three dairy production systems in Iowa—conventional, grazing and combination conventional/grazing, 2011, #M2009-12**

**Abstract:** This project estimates and analyzes the global warming potential emissions from three dairy production systems in Iowa: grazing, combination grazing/conventional, and conventional. A cradle-to-farm gate Life Cycle Assessment is performed for these three systems with milk production as the reference flow.

**Evaluation of the nitrogen and energy utilization of legume forages by growing cattle and sheep, 1999, #98-09**

**Abstract:** Forages can help maintain or enhance environmental quality by preventing soil erosion and increasing soil nitrogen so that less nitrogen fertilizer is needed. However, because the protein in most legume forages is highly degraded in the rumen of cattle or sheep, utilization of forage protein may be inefficient. This research project looked at the possibilities for using berseem clover and kura clover to increase feed efficiency of growing animals and lactating dairy cows.

**Expanding grass-based organic dairy enterprises among southeastern Iowa farmers, 2009, #D2007-02**

**Abstract:** Southeastern Iowa dairy farmers, including many Amish and Mennonites, need more outlets for their products, especially those being produced according to organic standards. This project promoted the use of grass-based dairy systems as a way to add value to dairy production in the area.

**Functional quality management systems for livestock producers, 2009, #2006-03**

**Abstract:** Quality management system programs were used to help farmers (niche market producers, a Midwest cooperative of pork producers, and other livestock producers) improve their management techniques and cost-control skills and increase market access.

**Grass-finished beef pilot project: Cattle performance and welfare, 2014, #DSP2012-02**

**Abstract:** The study compared growth results for Angus cattle raised under feedlot conditions and under a grass-finishing regimen. Outcomes used to answer this question included growth and carcass characteristics, behavior and animal welfare parameters for weaned cattle that were raised using grain feeding or pasture management systems.

**Growing dairy heifers in southwest Iowa, 2002, #99-11**

**Abstract:** Southwest Iowa farmers were looking for a farming enterprise to add value to their forage and grain production and use their labor. The original plan was to grow dairy heifers on pasture in the summer, sell them in the fall, and keep track of the economics of a dairy heifer system.

**Improving veterinary care for organic livestock systems, 2011, #M2010-05**

**Abstract:** Organic producers and Iowa veterinarians were questioned about the existing veterinary systems and care available to organic livestock producers.

**Is the meat goat enterprise profitable and sustainable? 2010, #M2007-28**

**Abstract:** Additional tools are needed to help producers successfully produce and market meat goats in Iowa. The project helped revise or create online tools to help producers monitor their operations more carefully.

**Livestock and the environment in Sioux County, 2003, #00-36**

**Abstract:** Why don't livestock producers make the best use of their manure resources? How can they do a better job? Focus groups and a countywide survey in Iowa's Sioux County, a major livestock producing area, were used to answer this question.

**A study of the factors that influence consumer attitudes towards beef products using the conjoint market analysis tool, 2009, #M2005-27**

**Abstract:** Beef producers looking for a competitive edge in today's markets need information about the qualities that consumers consider most important. Using conjoint marketing analysis allowed the investigators to sort out the most relevant characteristics for meat purchasers.

**Sustainable economic development through organic and grazing dairy farm establishment and transition, 2010, #D2007-01**

**Abstract:** This project aimed to increase the number of grass-based and organic dairies in Iowa. However, progress was stymied by the severe 2008-09 economic downturn that kept beginning dairy farmers from getting into the business, and also forced some current producers who were candidates to transition to alternative methods to exit the business.

**Winter grazing of stockpiled grass-legume forages to reduce costs of developing beef heifers, 2006, #E35-2004**

**Abstract:** Livestock producers looking for ways to cut costs may find that winter grazing offers a viable option.

## Marketing and food systems initiative

### **The actual cost of food systems on roadway infrastructure, 2011, #M2009-15**

**Abstract:** The variations among transportation costs for local, regional and conventional food production and distribution systems were investigated for three Iowa counties.

### **Adding a new generation to Iowa's sustainable farms, 2010, #M2008-15**

**Abstract:** Making a graceful transition from one generation to the next is a challenge for any Iowa farm family. The Practical Farmers of Iowa organization looked for ways to smooth the path to farm operation for new farmers interested in sustainability.

### **Analyzing local food systems for success: Naming and graphing entrepreneurial and community based agriculture linkages, 2007, #M04-2004**

**Abstract:** The project sought to document food- and community-related information available in southwest Iowa counties and to connect various sectors that might work together to add value to local foods and increase food commerce.

### **Assessing needs and fostering agricultural entrepreneurship among immigrants in several Iowa communities, 2008, #M2006-07**

**Abstract:** Two Iowa communities learn about opportunities to support local immigrant populations with an interest in farming enterprises.

### **Assessing the market potential for goat meat among recent immigrants to Siouxland, 2007, #M33-2005**

**Abstract:** The niche market for goat meat is expanding with Iowa's immigrant population. Researchers consider how farmers can tap into that market.

### **Assessing the market potential of specialty forest products in local food systems, 2005, #04-M08A**

**Abstract:** Non-timber specialty forest products show potential for farmers hoping to diversify their operations. This project and survey evaluated the interest in and obstacles to the production and marketing of these crops.

### **Bridging the gap: What does it take to bring small- and medium-sized producers and retail and foodservice distributors together? 2008, #M2006-05**

**Abstract:** Bringing farmers and food distributors together to find common ground could accelerate the spread of locally grown food throughout the food chain.

### **Building a direct-to-consumer food distribution system in Iowa, 2010, #M2007-19**

**Abstract:** Farmers interested in direct market distribution of their products were able to use information from the experiences in other states to help start a cooperative that sells products in a Des Moines shopping mall.

### **Building a food system framework to advance food access and the health of Iowans – a blueprint for action, 2012, #M2010-02**

**Abstract:** A working group that united a multitude of stakeholders with broad interests in food and health issues was formed to enhance all elements of Iowa's food system.

**Building the Iowa wine culture through improved quality, 2011, #M2010-03**

**Abstract:** Iowa's first "State of the Viticulture Industry" quality report was prepared by the ISU Extension Value Added Agriculture Program and the Midwest Grape and Wine Industry Institute to identify quality benchmarks for the industry.

**Building student awareness and involvement in the Farm to ISU program, 2011, #M2009-14**

**Abstract:** Iowa State University Dining Services initiated the Farm to ISU program to increase purchases of local foods by 35 percent by 2012. This project sought to boost the awareness of ISU students about Farm to ISU and the importance of buying locally-produced foods.

**Business organization and coordination in niche hog marketing, 2008, #M2004-22**

**Abstract:** Niche hog marketing enterprises face a unique set of challenges. This study considered five critical management issues, and analyzed the workings of two niche pork markets in Iowa. Issues of market timing, product quality, process verification, business organization, and sharing of returns are discussed.

**Case studies and benchmark transaction costs for select food products, 2007, #M02-2006**

**Abstract:** Producer-distributors can use the information in this set of case studies to identify commercial advantages and disadvantages that can affect the success of their enterprises.

**Cash flow and product profitability analysis and improvement for small meat processors, 2008, #M2007-16**

**Abstract:** Education on financial management techniques, individual assistance, and valuable information was provided to several of Iowa's small meat processing firms.

**Co-location of industries with small livestock slaughter facilities in the Midwest, 2004, #M03-04**

**Abstract:** This November 2003 study researched the possibilities for Iowa producers who are interested in specialized smaller-scale slaughter facilities and their potential, both for co-products and related industries.

**Community economic impact assessment for a multi-county local food system in northeast Iowa, 2009, #M2008-05**

**Abstract:** The positive results of a decade's worth of investment in local food systems in the Black Hawk County area were documented.

**Company environmental and societal positions as sources of competitive advantage: Implications for sustainable agriculture producers, 2005, #04-M05**

**Abstract:** Use of an environmental positioning strategy can help small-scale agricultural producers present their products to consumers in a more appealing manner.

**Company environmental and societal positions as sources of competitive advantage: Consumer- and retailer-level effects, 2006, #M07-2005**

**Abstract:** Smaller producers need to differentiate themselves from larger operations to ensure their economic survival. One way to do this is to market their products as being environmentally friendly and/or socially responsible.

**Connecting family, community, and health from a food system perspective, 2012, #M2010-30**

**Abstract:** Finding ways to increase the amount of local food served to children was the goal of this project. Investigators considered a variety of options to help parents of school-age children add locally grown produce to their diets.

**Consumer perceptions of place-based foods, food chain profit distribution, and family farms, 2006, #MSP05-2004**

**Abstract:** Consumers were asked for their views on a variety of alternative marketing scenarios for food products; the scenario responses offer guidance for producers seeking new ways to position their products.

**Convening the Regional Food Systems Working Group, 2014, #M2013-10**

**Abstract:** This project continued the convening of the Regional Food Systems Working Group (RFSWG) while developing best practices of members and the leaders of the steering committee and setting the stage for further activities.

**Des Moines farm to school pilot project: Local sourcing for special events and summer feeding, 2013, #MSP2012-02**

**Abstract:** Pilot project explored what sorts of activities are successful in raising the interest of school food service personnel and students in buying, serving and eating local food.

**Determining the methods for measuring the economic and fiscal impacts associated with organic crop conversion in Iowa, 2008, #M2006-12**

**Abstract:** This study examines the economic benefits and risks that increased organic crop production can bring to a community or region.

**Developing an integrated research and outreach program for niche pork, 2006, #M28-2005**

**Abstract** The project goal was to help farmers with production challenges involved in raising niche hogs (i.e., certified organic and antibiotic-free). It focused on developing and securing funds for an integrated research and outreach program to address swine production challenges. A second strategy was to continue to provide support for the Pork Niche Market Working Group.

**Developing production, processing and marketing of aronia berries on small family farms in southeast Iowa, 2012, #M2009-05**

**Abstract:** ISU Extension and Outreach specialists worked with several stakeholder groups to educate southeast Iowa farmers about the aronia berry, a crop new to Iowa with potential for market growth.

**Development of a niche agriculture small business money map and process to disseminate information, 2008, #M2007-06**

**Abstract:** A key constraint for small businesses is the dearth of operating capital. The situation is especially critical for niche market agricultural enterprises. This project identified barriers in access to capital for niche marketers.

**Development of an online food safety training for employees of university farms and school gardens, 2014, #M2013-12**

**Abstract:** With a rise in the number of publicly accessed fruit and vegetable growing venues, there is a need for food safety training for staff of these schools and research facilities. This project created a variety of media options to educate workers about proper ways to handle fruit and vegetables to ensure food safety.

**Development of a rural wine culture in Iowa, 2007, #M14-2005**

**Abstract:** The project documents the process of creating a geographically-based identity for grapes and wine production in eastern Iowa.

**Documenting the costs and benefits of whole animal local meat purchases by three northeast Iowa institutions, 2005, #04-M06**

**Abstract:** Results from this project are aimed at facilitating the purchase of locally grown livestock by institutional buyers.

**Economic analysis of current and potential Muscatine melon market, 2006, #MSP09-2004**

**Abstract:** The Muscatine melon traditionally has been one of Iowa's best known produce items. As the number of acres and producers decline, melon producers are looking for ways to make their product a more attractive economic production option, and place-based marketing may be helpful. Melon producers, however, need to ask themselves if they are willing to cooperatively develop and market a place-based product in order to achieve higher prices and profitability.

**Economic viability of local food marketing for restaurant operations and growers/producers in Iowa, 2007, #M17-2005**

**Abstract:** The study considers what economic costs and benefits, and non-economic factors would influence restaurants and producers/growers to purchase/sell locally grown/produced foods.

**Effects of ambient temperature and transportation distances on the resulting pork quality, 2009, #M2007-13**

**Abstract:** Factors beyond the farm gate can affect the quality pork product, among them temperature and amount of time for transport. This study examines how these factors affect producers selling in the niche pork market.

**Engaging community planners and local elected officials with local food systems producers to integrate local food systems into community plans and policies, 2011, #M2010-21**

**Abstract:** Researchers examined three key obstacles to making progress in local food systems that could be handled by applying community planning tactics.

**Enhancing value and marketing options for pawpaw by developing pulp separation and preservation techniques, 2013, #M2009-20**

**Abstract:** Project investigators tested the potential for production and utilization of the pawpaw as an alternative crop for Iowa fruit growers. Fruit from an ongoing trial was processed and preserved for future marketing.

**Establishing shared-use processing facilities at three possible locations in central and south central Iowa, 2015, M2012-06**

**Abstract:** One way for small-scale food producers to make money is to add value to their products. Shared-use kitchens offer an option for further processing, cooking, or preservation for a variety of fruit and vegetable crops. This project examines some of the critical factors in establishing and successfully operating a shared-use kitchen.

**Evaluating the impact of a decade of regional food system work on growers in northeast Iowa, 2013, #M2010-19**

**Abstract:** This report describes findings of a survey completed by farmer/growers involved with the Northern Iowa Food and Farm Partnership (NIFFP). It describes their opinions and interests as formed by their past involvement in the regional food system, and identifies their areas of need as owners of farm businesses.

**Evaluating on-farm food handling practices and microbiological quality of locally grown produce and eggs, 2005, #04-01 MSP**

**Abstract:** Food safety practices used on the farm by Iowa fruit and vegetable and fresh shell egg producers were examined. Recommendations for improvements were suggested at a workshop at the end of the project and several extension bulletins were published.

**Experiential educational engagement with working groups and communities of practice, 2011, #M2010-25**

**Abstract:** An ISU graduate class in sustainable agriculture was used to foment student interest in community-based projects related to the heightened interest in Iowa food, fiber and energy enterprises.

**A feasibility study for the creation of a meat processing training program in Iowa, 2011, #M2009-28**

**Abstract:** The unique needs of Iowa's small meat processors include more educational opportunities. This project explored how to provide additional training to these important rural businesses.

**A food distribution network for the Northern Iowa Food and Farm Partnership, 2011, #M2009-19**

**Abstract:** Matching the supply of local food to the demand requires local food producers to make adjustments in their food distribution systems. This project looked at collaborative models to help these producers make their post-farm operations more efficient.

**From farm to market in northwest Iowa, 2011, #M2010-01**

**Abstract:** Aggregating products and marketing efforts can help local food producers in a less urban area make their operations more profitable.

**Grinnell Area Local Food System Initiative, 2006, #M01-2003**

**Abstract:** This project provides a model for formation of a consortium of organizations to encourage and oversee the development of a local food system based upon sustainable farming practices.

**Grinnell Area Petroleum Replacement Initiative, Phase 2, 2009, #M2008-12**

**Abstract:** On-farm creation of bioenergy may not be out of reach of the average small farmer. This project looked at some of the small-scale energy technologies available and assessed their promise for use by small farmers.

**Growing Farm to ISU: The first five months, 2008, #MSP2007-01**

**Abstract:** Working together, ISU Dining and local producers seek to improve communications and sales of local food products.

**Growing your small market farm business planning program, 2005, #04-MSP6**

**Abstract:** This business planning program offered guidance and advice to aspiring and existing specialty farm business people to create their own specialty farm business plan.

**Growing your small market farm business planning program, 2008, #M2005-19**

**Abstract:** Small farm business enterprises receive technical advice and planning assistance.

**High-tunnel resource manual and producer resource kit providing the tools for profitability, 2011, #M2009-16**

**Abstract:** Producers interested in high tunnel production received instructions and guidance on how to operate these structures successfully.

**Identification of plant residue with commercial potential as natural dyestuffs, 2005, #03-M6**

**Abstract:** The project explored whether plants grown by farmers' market producers could be used successfully as natural dyes for textile making. A variety of plants and dyestuffs were investigated.

**Impact of GAPs and post-harvest handling practices certificate trainings on producers' on-farm food safety behaviors and perceptions of customers' assurance, 2012, #M2010-14**

**Abstract:** Food producers received training in on-farm food safety and proper agricultural practices. The intended result was to alleviate consumer concerns about food safety and assure wholesale buyers of food purity.

**Implementing a seasonal, cycle menu for public schools featuring Iowa-grown and processed foods, 2015, M2013-09**

**Abstract:** New nutrition regulations for student meals spurred a project to help schools use more Iowa-grown products with the creation of a seasonal, cycle menus. Utilizing cycle menus, training students in cafeteria coaching, and access to a local food hub yielded good results for several northeast Iowa schools.

**Improving profitability for small and very small meat processors in Iowa, 2014, #2012-16**

**Abstract:** The project developed a curriculum to improve productivity along with follow-up classes and services to help small meat processors in Iowa. The lessons covered scheduling, product mix decisions, retail inventory management, and shop floor performance measurement.

**In Good Company, 2012, #M2011-15**

**Abstract:** Efforts by a group of southeast Iowa producers to create an aggregated marketing organization yielded mixed results.

**Increasing access to healthy, fresh, and local food to students in three rural public schools in northeast Iowa, 2013, #M2010-18**

**Abstract:** Mini-grants were offered to three school districts and the food service directors gathered regularly to share their insights and experiences. All school districts involved made significant progress in moving toward their goal of offering healthy, locally grown meals.

**Innovative equipment solutions to reduce costs and improve productivity for small-scale fruit and vegetable growers, 2014, #M2013-07**

**Abstract:** An array of equipment is available to help fruit and vegetable growers with specialized production and processing tasks. This study examined ways for these small operators to share equipment and maximize their use of the shared implements.

**Insurance benchmarking for Iowa fruit and vegetable producers, Year 2, 2015, M2014-11**

**Abstract:** Iowa fruit and vegetables growers need risk management options similar to those available to row crop producers. However, there was no body of data on production costs and sales that would guide the development of such insurance options. This project collected data from Iowa growers that will allow federal and state agencies to create and adapt insurance instruments suitable for fruit and vegetable producers.

**Investigation of the economic feasibility of pasture-based dairy operations in northwest Iowa, 2008, #M2006-09**

**Abstract:** Starting a dairy operation can be a feasible option for beginning farmers. This project explored what would make pasture-based or conventional dairying profitable for interested producers.

**Investigating the feasibility of establishing food processing and distribution centers in western Iowa, 2009, #M2007-33**

**Abstract:** With increasing enthusiasm for local food in western Iowa, there is interest in production, purchasing and processing of items grown in the region. This study examined the capacity, skills, and demands for local food in this area.

**Johnson County Food Education Program, 2004, #M03-05**

**Abstract:** If consumers are better informed about access to local foods as well as ways to prepare these foods, they may be more likely to seek out locally produced food.

**Let the vineyards be fruitful: A study of the potential market for Iowa grape juice, 2004, #M03-03**

**Abstract:** As grape production in Iowa increases, growers are looking for new markets. This study considers the buying potential for locally grown and processed grape juice.

**Leveraging student expertise to solve food production and marketing problems, 2009, #M2003-04**

**Abstract:** Teams of business, agriculture, and food science student teams worked with small market farmers to help them make better business decisions about their operations.

**Life in Iowa Homecoming Institute, 2007, #M02-2003**

**Abstract:** College students were immersed in Iowa community life for 10 weeks each summer. They worked with mentors to complete internships and community service projects.

**Local food capacity in north central Iowa: Nutritional need, economic strategy, 2005, #04-M21**

**Abstract:** The Wright County Here's to Our Health Committee sought to expand local food activity in their area. This project offered information and support for added depth and breadth in the promotion of local food production and consumption.

**Machinery management for small- and medium-sized horticultural farms, 2014, #M2012-11**

**Abstract:** Machinery and equipment needs are far different for vegetable farms than for commodity production units. This project explored the unique machinery access options for small and mid-sized horticulture operations.

**Mapping biomass markets in Iowa, 2009, #M2008-04**

**Abstract:** Three different models for marketing and supplying alternative food and fuel products were prepared and shared with the public.

**Mapping potential foodsheds in Iowa: A system optimization modeling approach, 2012, #M2010-04**

**Abstract:** Linear programming tools are used to gauge regional potential for local diversified agriculture required to meet the dietary needs of the population.

**Market analysis of alternative crop production in Iowa, 2005, #04-M09**

**Abstract:** A spreadsheet was created to provide producers, distributors, and marketers with more information about county-level supplies of local food products.

**Market Maker for Iowa, 2007, #M29-2005**

**Abstract:** Use of a web-based program can help Iowa producers pick and choose the best national markets for their products.

**New Farmer Jump Start Project, 2010, #M2008-14**

**Abstract:** Southwest Iowa development groups looked at several ways to entice new farmers to commit to local food production.

**New food entrepreneurs: Value added enterprises for farm profitability, facilitating understanding between producers, processors and policymakers, 2008, #M2006-23**

**Abstract:** This study researched the challenges and opportunities to improving Iowa's small food processing sector.

**Niche markets in the agricultural enterprise mix: Farm profit optimization and risk analysis, 2014, #2006-16**

**Abstract:** An existing MS Excel computer-based program (FARMOR) was further developed and enhanced to assist niche market producers in making appropriate and profitable choices for their enterprises.

**Northeast Iowa local food survey summary report, 2009, #RWG2007-01**

**Abstract:** Institutional buyers in northeast Iowa were questioned about local food attributes and purchases.

**Organic agriculture program viability study, 2009, #M2007-03**

**Abstract:** A survey was conducted to determine the viability of offering an organic agriculture program and classes at Western Iowa Tech Community College.

**Organic, natural and grass-fed beef: Profitability and constraints to production in the Midwestern United States, 2008, #M2005-30**

**Abstract:** Farmers considering a transition from conventional beef production to one of several alternative production systems (such as organic, natural, or grass-fed) need to be well informed about the possible challenges and constraints of making this shift.

**Pilot project to identify and measure the relevant costs of production for sustainable agriculture products, 2008, #M2004-05**

**Abstract:** Accounting professionals sought to help farmers understand costs of production for their products.

**Plan demonstration farm to include farm business incubator and educational use, 2009, #M2006-24**

**Abstract:** A farm plan was created to guide land use decisions for the demonstration farm at the Midwest Center for Entrepreneurial Agriculture in Marshalltown, Iowa.

**Planning a facility for value-added farm business incubation and educational use, 2009, #M2006-25**

**Abstract:** A survey of the community and surrounding region was conducted to determine the financial viability of a shared-use certified kitchen, which would be offered as one of the services of the Midwest Center for Entrepreneurial Agriculture.

**Planning grant for the establishment of a food enterprise center, 2015, M2014-10**

**Abstract:** An assessment of community resources to support the development of a food enterprise center (FEC) or food hub was completed through planning meetings with community stakeholders. Local farmers and food businesses were surveyed and interviewed to determine their interest in the services of a food hub and FEC.

**Planning grant for expansion of Food Alliance ecolabel program in Iowa, 2005, #04-M14**

**Abstract:** Food Alliance Midwest has established certification programs in Minnesota and Wisconsin to indicate when products were grown using environmentally and socially responsible practices. This project considered how to expand the certification process to Iowa.

**Potential to operate greenhouses and aquaculture in conjunction with Iowa's ethanol plants, 2008, #M2007-08**

**Abstract:** Iowans looking for value-added enterprises to pair with ethanol plants can consider greenhouses and aquaculture operations as options.

**Pottawattamie County Farm to Fork, 2010, #M2008-08**

**Abstract:** Using a modest amount of seed money, the Pottawattamie County Local Food Council was able to support the development of local farmers markets, hire a local food coordinator, create the Grow Growers program, and make progress on local food system development.

**Pottawattamie County Farm to Fork (Phase III), 2011, #M2009-02**

**Abstract:** This continuation of a previous project showed the value of hiring a local food coordinator to aid in advancing local food systems in southwest Iowa.

**Procurement tools to develop sustainable local food purchasing models for Farm to School chapters, 2014, #M2012-07**

**Abstract:** Farm to school efforts often are stymied by the difficulties of sourcing local food in large enough quantities and on a schedule that works for the participants. An Iowa RC&D developed tools and education that were needed to help these programs get started and succeed in bringing more local food into school lunchrooms.

**Producer machinery and labor sharing arrangements workshops, 2011, #M2008-02**

**Abstract:** Four case studies were developed for Iowa farm operations that have successfully used machinery and labor sharing arrangements for intergenerational transfer of farm assets. Results were shared at workshops and through publication of a resource manual.

**Recordkeeping education and insurance benchmarking for Iowa fruit and vegetable producers, 2014, #M2013-08**

**Abstract:** Being able to share data about actual production and sales is critical to the success of producers hoping to purchase crop insurance or obtain a loan. This project helped a group of small producers figure out recordkeeping within their operations as a start to creating a baseline for Iowa fruit and vegetable production.

**Reducing local regulatory barriers to local foods: The "Municipal Zoning for Local Foods in Iowa" guidebook, 2015, P2014-01**

**Abstract:** A guidebook was created to help municipal officials navigate the legal, political and economic challenges of encouraging urban agriculture in their communities.

**Regional Flavors, 2012, #M2010-23**

**Abstract:** Northwest Iowa county agencies and groups worked together to promote the unique aspects of their local production system. Tools include mapping, marketing, outreach and education, and branding.

**Research and assistance in support of the *Foodsheds in the Upper Midwest Initiative* to measure the economic impacts of increased local food production and consumption, 2011, #M2009-07**

**Abstract:** This report produced for an upper Midwest consortium of Iowa, Illinois, Indiana, Michigan, Wisconsin and Minnesota demonstrated the economic value of local foods production and direct marketing under two scenarios.

**Research and development of an on-line local foods buying club cooperative, 2013, #M2011-03**

**Abstract:** Setting up an online food cooperative carries a special set of challenges. Eastern Iowa food system practitioners worked to create a successful cooperative operation to increase local food sales in their communities.

**Researching and evaluating an effective web-based local food sales template, 2009, #M2007-31**

**Abstract:** Local producers and institutions developed and tested a web-based template designed to simplify internet retail sales of local foods.

**The role of collaborative community supported agriculture: Lessons from Iowa, 2007, #M01-2005**

**Abstract:** The project surveyed a variety of CSA collaborators and participants to determine whether CSAs could serve as business incubators for small-scale, rural enterprises in Iowa.

**Routing foods in to southeast Iowa, 2011, #M2009-10**

**Abstract:** The investigators studied the feasibility of starting and operating a farmers' market cooperative in southeast Iowa.

**Safe food handling practices on the farm: Meeting the needs of foodservice operations, 2009, #M2007-36**

**Abstract:** Local food producers need to be aware and up-to-date on the ways to handle food safely. A pilot workshop was conducted and used as the basis for communicating food safety practices most efficiently.

**Small and midsize Iowa farmer marketing, entrepreneurship and business planning skills training program, 2007, #M06-2005**

**Abstract:** This highly customized training program was targeted to small and midsize farmers as well as off-farm ag-related (food/fiber) entrepreneurs in northeast Iowa.

**Small-farm business development incubator for refugee farmers, 2015, M2014-02**

**Abstract:** Beginning farmers who also are recent U.S. immigrants face a steeper learning curve due to language and cultural challenges. This project devised training and marketing education programs for these new farmers, while making accommodations for the unique challenges they face in establishing their operations.

**South Central Iowa Area Partnership, Local Foods Network, 2012, #M2010-20**

**Abstract:** The project explored various ways to expand and promote local food enterprises and consumption in south central Iowa.

**Southwest Iowa Entrepreneurial Center: An achievable product-to-market business model for small/niche ag producers, 2006, #M13-2005**

**Abstract:** The project takes the first steps to determine if a home-meal replacement enterprise would be a successful venture for small-scale producers in southwest Iowa.

**Southwest Iowa institutional foods survey and producer training program, 2009, #M2005-12**

**Abstract:** The project determined the demand and value of locally grown foods for use in the institutional market, and attempted to quantify the supply available in southwest Iowa.

**Strategies to effectively promote and market on-farm retail enterprises, 2010, #2008-16**

**Abstract:** Agritourism offers consumers the opportunity to purchase locally grown food on the farm along with the educational experience of learning about food production. This project was designed to help energize Iowa's agritourism industry.

**Strategies to stabilize locally grown produce for year-round sales: A feasibility study, 2010, #M2006-21**

**Abstract:** Local markets are dependent on fresh-grown products that are available only on a seasonal basis. This project looked at possible ways to preserve fruits and vegetables for profitable sales in the offseason.

**Strengthening the local and regional food system in the Iowa Valley, 2008, #M2007-17**

**Abstract:** Local leaders, residents, and food producers banded together to form a collaborative food system in the Iowa Valley region.

**Strengthening the local and regional food system in the Iowa Valley: Iowa Valley Regional Food Initiative, 2009, #M2008-17**

**Abstract:** Creating a local food system can be achieved more efficiently by assembling a strategic plan with input from a variety of stakeholders and interested parties.

**Strengthening the local and regional food system in the Iowa Valley: Enhancing the sustainability of the University of Iowa food system, a Factor-10 approach, 2009, #M2007-22**

**Abstract:** Promoting local food systems and products can be challenging when dealing with a large university purchasing and procurement system, as shown by efforts at the University of Iowa.

**A study of place-based food tourism in northeast Iowa communities, 2006, #MSP01-2005**

**Abstract:** Food tourism festivals have the potential to grow markets and add value to existing place-based food products. The project profiles food tourism and documents the potential in northeast Iowa for benefits to farmers and communities.

**Supply chain options for bio-based businesses, 2005, #04-M13**

**Abstract:** This 65-page research paper investigates and evaluates the supply chain structures currently being used in bio-based businesses, as well as presenting corollary examples of supply chains in businesses of all types (in the United States and abroad).

**Supporting direct meat marketing in Iowa, 2006, #M17-04**

**Abstract:** This project helped farmers and processors to identify a variety of constructive ways to make direct meat marketing more successful and profitable. Tools included farmer workshops, market surveys, and various educational tools about marketing techniques.

**A survey of commercially available broilers originating from organic, free-range and conventional production systems for cooked meat yields, meat composition and relative value, 2007, #M01-2006**

**Abstract:** The project analyzed meat from broilers raised in three production systems to determine how they differed in terms of cost, yield, and various chemical and sensory qualities.

**Sustainable agriculture, marketing, entrepreneurship, and business planning skill, 2007, #M03-2005**

**Abstract:** A southern Iowa community college developed a multi-faceted agriculture education program to help revitalize the area's rural agricultural economy.

**Sustaining agricultural producers through direct marketing of processed foods, 2006, #02-16**

**Abstract:** Farmers who want to grow specialty crops need to cultivate different marketing skills. They also need information about the profitability of producing raw foods and processed products.

**Taste of Place: Place-based foods in Iowa, 2007, #M02-2005**

**Abstract:** During 2005, the Iowa Foodways Project: Taste of Place researched, via surveys, interviews and photography, Iowa-produced foods that have a connection to place and heritage.

**Taste of Place Project, Phase II: Outreach, 2007, #M13-2006**

**Abstract:** Information gathered in a 2005 Leopold Center-funded project about special Iowa-based foods receives wider dissemination on a web site containing facts, photos, and interviews with the food producers.

**Transitioning farmers to produce for wholesale markets, 2014, #M2012-02**

**Abstract:** Ramping up production from direct sales to providing goods for wholesale markets means farmers must acquire new skills and competencies. Working through a farmer cooperative, producers were offered education on food safety and how to expand their operations effectively.

**Transitioning the Pork Niche Market Working Group to self-sufficiency, 2011, #M2010-16**

**Abstract:** A case study and business plan were created to support continuation of the Pork Niche Market Working Group.

**Transplant production decision tool for vegetable producers, 2013, #M2010-10**

**Abstract:** When local vegetable producers "scale up" their production to meet an increasing demand for local produce from institutional and retail purchasers, they face a number of investment challenges as they adopt appropriate systems and techniques. A key area of interest is how to manage transplant production as growers expand their operations.

**Update of the Iowa Produce Market Potential Calculator website, 2011, #M2009-01**

**Abstract:** The Iowa Produce Market Potential Calculator was updated to include more topics and methods of calculating produce marketing options.

**Using contracts to expand produce market opportunities, 2007, #M18-2005**

**Abstract:** Contracts and market agreements could help local food producers manage the risk of increasing production while guaranteeing supplies for potential purchasers.

**Using spatially explicit supply/demand and local participants' perspectives to integrate urban agriculture with community planning, 2015, #M2014-05**

**Abstract:** Community gardens boast many attractive features, from appearance to opportunity for healthy food production to encouragement of citizen engagement. This project looked at the potential for community gardens to enhance their reach and successes.

**Web-based interactive decision model for determining economic feasibility of growing grapes and establishing a small winery for wine and grape juice, 2006, #M16-2004**

**Abstract:** Farmers and entrepreneurs interested in growing grapes and producing wine receive a realistic picture of the process and what it takes to be successful by using these web-based decision-making tools.

## Nutrient management

**Determining threshold responses of plant-soil feedbacks to nitrogen deposition, 2015, E2014-01**

**Abstract:** Change associated with nitrogen deposition in the soil will alter ecosystem function and diversity. This study looks at precisely how plants and soil will interact to respond to the addition of N at various levels and in different forms.

**Developing ecologically sound and profitable alternative fertilizer and manure phosphorus management strategies, 2008, #E2004-29**

**Abstract:** Revised guidelines for the Iowa State University (ISU) phosphorus (P) recommendations and ISU P management may be needed. This project utilized fertilizer and poultry manure P and experiments at research farms and producers' fields with corn-soybean or alfalfa-corn rotations to evaluate several P management practices and provide new knowledge about P management.

**Development of guidelines for application of swine manure to optimize nitrogen management for corn, 1999, #96-10**

**Abstract:** Results from on-farm trials were analyzed to develop guidelines that will help farmers evaluate and improve their manure-N management, including utilizing swine manure as a cost-effective substitute for commercial fertilizer. The experimental methods included use of the late-spring test for soil nitrate and the end-of-season test for cornstalk nitrate to measure N availability at each research site.

**Education based incentive program to enhance long-term adoption of sustainable nutrient/pest management—a demonstration with farmers in northeast Iowa, 2000, #97-21**

**Abstract:** The Nutrient and Pest Management Incentive (NPMI) Education program used education to encourage producers to adopt environmentally sound management practices. Participants received small incentive payments to participate in a three-year series of workshops that showed them how to devise nutrient management plans for their own farms.

**Environmental impacts of the use of the use of poultry manure on water quality, 2004, #99-68**

**Abstract:** The significant expansion of the U.S. poultry industry has led to questions about the effects of large amounts of poultry manure on the surface and groundwater. These are the final year's results of a field study on how poultry manure application can affect water supplies.

**Impacts of swine manure application and alternative N-management practices on productivity, sustainability, and water quality, 1998, #97-60**

**Abstract:** In the fourth year of this ongoing project, the effects of nine N-management practices under different tillage and cropping systems were evaluated. Forty experimental plots equipped with individual sumps and subsurface drainage metering and monitoring devices were used for the study. Overall results indicate that manure application rates and methods can be successfully managed for corn-soybean systems without damaging the water quality if the appropriate amount of N from swine manure can be applied.

**Investigation of bacteria transport and resistance mechanisms and implications for water quality from confinement swine and beef grazing production systems in Iowa, 2015, #E2012-05**

**Abstract:** This multi-scale, multi-year study was conducted to begin answering questions related to the fate and transport of nutrients and bacteria from land receiving manure application. Experiments were conducted on tile water drainage at an ISU Research Farm in northeast Iowa.

**Mahaska County livestock manure/crop nutrient management demonstration project, 1998, #95-05**

**Abstract:** The project was developed from the requests of Mahaska County producers for information related to management of their livestock systems. Through surveys, sampling, and demonstrations, it was learned that there is a continuing need for individualized consulting linking manure and nutrient management. Producers also want more guidance about residue management and consistency of manure nutrient content.

**Nitrogen conservation in swine manure composting—land application systems, 2001, #99-62**

**Abstract:** The use of bedding in the popular hooped houses for swine production generates large volumes of manure that composts easily. However, composting results in nutrient losses, especially for nitrogen, which then diminish its value as a fertilizer. This study looks at carbon and nitrogen dynamics in the composting process and subsequent soil mineralization.

**Optimizing solid manure application by improving distribution, 2004, #01-24**

**Abstract:** Improving the uniformity of manure distribution may make it a more effective substitute for commercial fertilizer and allow farmers to take proper nutrient credit for the manure. Manure-spreading equipment or application techniques may need to be modified to be more efficient.

**Optimizing swine hoop manure management of soil quality and crop system performance, 2003, #00-42**

**Abstract:** What is the best way to deal with manure from hoop hog structures and other deep-bedding systems? This study offers agronomic and economic data to help farmers make a sound manure management decision.

**Reducing anhydrous ammonia application by optimizing distribution, 2003, #00-34**

**Abstract:** Anhydrous ammonia is one of the most popular ways to fertilize U.S. crops. As it has risen in cost, farmers and researchers have been seeking more efficient ways to apply this nitrogen fertilizer.

**Socio-technical and environmental dimensions of swine manure management decisions, 2001, #99-69**

**Abstract:** Once strictly a farm management concern, manure management is now a matter of state and societal interest. This qualitative study examines why and how farmers in two Iowa watersheds make decisions about manure management for their operations. Farmers interviewed explained the motives, logic, opportunities, and constraints that guide their use of particular management practices.

**Soil amendment effects on crop-weed interactions, 2003, #00-11**

**Abstract:** The used bedding from hooped hog production structures can be composted and spread on farm fields as a soil amendment. Researchers studied how this composted material affects crop yields, weed growth, and soil components.

## Pest management

### **Biocontrol of purple loosestrife by two host-specific European leaf-feeding beetles in Iowa wetlands, 2000, #97-41**

**Abstract:** Can the persistent purple loosestrife plant be kept in check by environmentally safe methods? This project tested the use of two kinds of *Galerucella* insects as biocontrol agents to combat the spread of purple loosestrife in Iowa wetlands.

### **Biocontrol of Sclerotinia stem rot in soybeans with *Sporidesmium sclerotivorum*, 1999, #96-31**

**Abstract:** Sclerotinia stem rot of soybeans (also known as white mold) is caused by a soil-borne fungus and has become a serious problem in northern Iowa. Another fungus, *Sporidesmium sclerotivorum*, acts as a parasite of the sclerotia and this research tested whether this mycoparasite could act as an effective deterrent to the soybean stem rot pathogen.

### **Biological control of the soybean aphid in organic and sustainable soybean production systems, 2006, #E02-2003**

**Abstract:** Predatory insects and parasitoids can be used to suppress soybean aphid populations. This project explores the development of bio-based insect lures to enhance the efficacy of biological control of soybean aphids.

### **Biological control of the tarnished plant bug in Iowa, 1997, #93-15**

**Abstract:** The tarnished plant bug (TPB) attacks strawberries in Iowa and the Midwest. The egg parasitoid (*Anaphes iole*) has been observed to parasitize TPB in several crops in the western U.S., but its activities have not been studied in strawberries in the Midwest. Under laboratory conditions, it was determined that *A. iole* will parasitize TPB eggs in strawberry stems. Releases of *A. iole* females in large field cages containing low densities of TPB eggs did not result in successful parasitization.

### **Biologically intensive manipulation of foxtail seed banks for enhanced mortality, 2002, #99-37**

**Abstract:** Studies were conducted at several Iowa locations to determine the fates and long-term carry-over of giant foxtail in agricultural soil weed seed banks, and the variability of these seed fates.

### **Biotic interference of biological control of purple loosestrife (*Lythrum salicaria*), 2005, #01-A33**

**Abstract:** Iowa State University has reared and released two European leaf-feeding beetle species to control purple loosestrife in Iowa wetlands. Expected reductions in loosestrife have not occurred, and biotic mortality factors may explain the failure of the beetles to curb the loosestrife.

### **The cereal leaf beetle in Iowa oats: Research and education program for biological control and sustainable management practices, 1997, #93-16**

**Abstract:** The cereal leaf beetle, a serious insect pest of small grains, including oats, was detected in the eastern half of Iowa in the early 1990s. Iowa's five leading counties for oat production are located in northeastern Iowa, and field surveys were conducted in this area to document the levels of cereal leaf beetle infestations, potential impact on production, and the presence of natural enemies. Findings showed that current cereal leaf beetle numbers are too low to cause economic damage and no compelling need exists to establish a management program aimed at this particular pest.

**Developing potatoes with horizontal resistance to the Colorado potato beetle, 2008, #E2004-26**

**Abstract:** Producers who grow potatoes can look to a new variety that features greater resistance to the Colorado potato beetle, the most financially damaging potato pest.

**Development of alternative carriers for use of *Beauveria Bassiana* in *Ostrinia nubilalis* suppression on corn, 2001, #99-75**

**Abstract:** The European corn borer (ECB) is a serious pest of corn causing significant yield losses in the Midwest. In continuous work on innovative control of the ECB via an entomopathogenic fungus, this project evaluated alternative carriers for delivery of *Beauveria bassiana* without increasing indigenous mycotoxins.

**Ecological impact of herbicides associated with transgenic soybeans on spider mites, 2002, #00-41**

**Abstract:** How do RoundUp® ready soybeans affect the growth of fungi that may keep down the populations of some significant soybean pests? Experiments in the laboratory and soybean fields explored this question.

**Effects of thrips on strawberry production in Iowa, 2004, #02-47**

**Abstract:** The presence of thrips (tiny insects) in strawberry fields has been associated with undesirable bronzing of the fruit. This study examines the links between thrips and damage to Iowa strawberries.

**Effects of transgenic *Bacillus thuringiensis* corn on European corn borer natural enemies and non-target Lepidopteran pests, 1997, #95-14**

**Abstract:** Field corn, genetically engineered to produce a protein derived from *Bacillus thuringiensis*, was evaluated for its effects on larvae of black cutworm, stalk borer, armyworm, and corn earworm. No Bt corn effects were observed on larval survival, pupal weight, or days to adult emergence for black cutworm or stalk borer. Armyworms reared on Bt leaf extract were lighter-weight, delayed in development, and showed diminished survival rates. Corn earworm showed reduced survival and delays in development. In field tests of Bt and non-Bt corn, there were no differences between the two varieties in damage from black cutworm. Stalk borer caused less leaf damage to Bt corn. Armyworm and corn earworm did less harm to Bt corn leaves than to non-Bt corn leaves, but corn earworm survived to cause some damage to Bt corn ears.

**Enhancement of agricultural weed control by manipulation of the light environment, 1998, #96-80**

**Abstract:** Studies suggest that emergence of weed seedlings can be diminished by decreasing the exposure of seeds to light during tillage. Field studies conducted near Ames, Iowa, tested the effect of excluding light during tillage on emergence of common weed species of central Iowa. Plots were tilled either during the day, during the day with implements covered, at night, or at night with implements covered, and subsequent seed emergence was monitored. The effect of brief exposure to light on germination of weed seeds under controlled laboratory conditions was also studied.

**Evaluating sustainable, integrated management of muskmelon diseases, weeds, and insect pests in partnership with Iowa growers, 2004, #01-21**

**Abstract:** Several ways to decrease grower reliance on chemicals in muskmelon production were studied.

**Evaluation of the impact of tillage/cropping systems on soil microflora and weed seedbank predation, 1999, #96-34**

**Abstract:** Soil erosion and pesticide use are critical issues in sustainable agriculture. With a view to decreasing the amount of pesticides used for weed control, researchers assessed the impact of tillage, cropping systems and weed management regimes on seasonal and long-term weed and weed seedbank population dynamics, especially in Conservation Reserve Program land being returned to production.

**Identification and characterization of the Rose Rosette disease causal agent, 1999, #98-33**

**Abstract:** Rose rosette disease is lethal to multiflora rose, a noxious weed occurring in pastureland in most of Iowa. The potential use of rose rosette disease as a biocontrol agent may be enhanced by grafting infected shoots onto plants in established stands (i.e., augmentation). However, questions arose about whether the disease could be spread to ornamental roses. This study probes the identity of the causal agent for the disease in hopes of determining whether fears of transmission to ornamental roses were valid.

**Improving soil quality by conserving insect pathogens, 2013, #E2010-18**

**Abstract:** Field and laboratory experiments were conducted to determine how best to encourage the presence of entomopathogenic fungi (EPF) that can act as naturally occurring controllers of crop pest infestations.

**Integrated pest management for wireworms, 1999, #96-02**

**Abstract:** With Iowa farmers returning land from the Conservation Reserve Program and pasture use to crop production, there is a need to deal with potential wireworm infestations. Researchers sought to develop an early warning system for locations “at risk” from wireworms, using Geographical Information Systems technology. User-friendly wireworm diagnostics for farmers were researched, along with low-risk cropping alternatives to planting insecticide-protected corn. Integrated Pest Management (IPM) recommendations were generated that, if implemented, will reduce unnecessary insecticide use in Iowa.

**Integrating biologically rational strategies for control of anthracnose fruit rot of strawberries, 2002, #99-64**

**Abstract:** Anthracnose poses a serious threat to Iowa's strawberry harvest. Several biologically friendly strategies were tested for their effectiveness in controlling anthracnose and positive impacts on yields.

**Integration of natural seed treatments in organic and open-pollinated corn systems, 2008, #E2004-28**

**Abstract:** Essential oils from the aromatic plants, such as thyme, oregano, cinnamon, clove, and savory, were used to effectively control several common seed and soil pathogens in the laboratory, and could be used as seed treatments in corn. Results from field experiments showed some oils protected the seeds from pathogens but not others. Before these natural products can be widely adopted, however, issues of volatility of the oils at ambient temperature and appropriate application rate must be addressed.

**Investigation of the influence of tillage for management of woolly cupgrass, 2005, #01-A56**

**Abstract:** Woolly cupgrass is a difficult weed for farmers to manage. Different methods of controlling woolly cupgrass are tested for efficiency and sustainability.

**Managing weeds by integrating smother plants, cover crops, and alternate soil management, 2003, #99-03**

**Abstract:** Any serious attempt to reduce pesticide use must focus on weed management. This project looks at practices to suppress weeds before crop planting, which will improve the effectiveness of other weed control tactics.

**Manipulation of predatory insects for enhanced biological control of insect pests, 2001, #98-72**

**Abstract:** Findings from this project provided the basis for novel forms of biologically intensive pest suppression, and encouraged the development of attractant-lures. Preliminary studies demonstrated the efficient use of the lures with a previously developed dispenser system.

**Nontarget effects of Bt corn on pathogenic and toxigenic fungi, 2002, #00-29**

**Abstract:** There may be non-target effects of transgenic corn hybrids, positive and negative, on fungi that interact with the targeted pests. What are the effects of Bt corn on fungi that are associated with corn plants and their insect pests?

**Pheromone mating disruption: novel, non-toxic control of the European corn borer, 1999, #97-19**

**Abstract:** The European corn borer is one of the most damaging insects in Iowa cornfields, causing more than \$100 million in crop losses each year. In this project, the sex attractant pheromone of the European corn borer was used to obstruct the ability of the adult male moths to locate females for mating. In the first year, efforts focused on mating disruption in a small area, while in the second year dispensers were deployed on a larger scale and evaluated for efficacy.

**Spring-seeded smother plants for weed control in corn and soybeans. 1999, #96-03**

**Abstract:** Smother plants are specialized cover crops developed for their ability to suppress weeds and may provide an alternative, non-chemical method of weed control. The goal of this project was to define the characteristics and mechanics of establishing a successful spring-seeded smother plant system and to study and exploit the competitive interactions among weeds, smother plants, and the crop.

**Use of intra-field alfalfa trap cropping for management of the potato leafhopper, 2001, #98-43**

**Abstract:** The potato leafhopper, a serious alfalfa pest, may be controlled by early harvest or by application of insecticide. Using natural enemies to battle the leafhopper is another option. Selective cutting in alfalfa fields may help curb leafhopper infestations by confining the pests in one strip, which also may harbor a fungus that helps to control the leafhopper.

## Policy initiative

**Adapting land retirement programs in response to Iowa's changing economy, 2011, #EP2007-30**

**Abstract:** The project explored the effects of Iowa's burgeoning biofuels economy on existing and future land conservation and preservation efforts.

**Beginning and mid-size Farm Bill analysis: Policy option development and education initiative, 2010, #P2006-09**

**Abstract:** The needs of beginning mid-size farmers were considered in light of current farm programs and beginning farmer initiatives. Policy options were developed for a new approach to assisting these under-served groups.

**Cooperation: A survival strategy for small and medium-sized farms, 2008, #P2003-16**

**Abstract:** Farm input and supply cooperatives are commonly used with success in U.S. agriculture. There may be potential for similar cooperative strategies to help small and medium-sized farmers share machinery, labor, and expertise.

**Credit, crop insurance and sustainable agriculture, 2012, #P2009-07**

**Abstract:** Various factors make it harder for farmers using sustainable practices to access financial resources. This project used surveys and interviews to pinpoint what these factors are and how they might be alleviated.

**Evaluating the Conservation Security Program utilizing the perceptions and economics of producer participation: Implications for land stewardship in Iowa agriculture, 2009, #P2006-06**

**Abstract:** The Conservation Security Program (CSP), a “green payment” program, emphasizes rewarding the best stewards of natural resources and attracting the rest via reward payments. This report analyzes the CSP in Iowa. Program goals and its success in meeting those goals are evaluated. Results in four Iowa watersheds are summarized.

**The extent and impact of trust ownership on the sustainability and resiliency of Iowa’s agricultural landscape, 2014, #P2012-01**

**Abstract:** The popularity of trusts as a land management tactic has been increasing. Using survey results, an attorney and economics professor examined the kinds of trust arrangements that exist in Iowa and how they might be used to encourage conservation practices and sustainable agricultural management.

**Farm Bill listening sessions, 2007, #P01-2006**

**Abstract:** Rural residents share their opinions about current farm policy and prospects for the next federal Farm Bill in 2007.

**Forming agricultural bargaining units for a sustainable and equitable agriculture: The case of the Organic Farmers Association for Relationship Marketing (OFARM), 2006, #P10-2003**

**Abstract:** This study examines the structure, function, and perceived success of an organic growers’ cooperative organization called OFARM.

**Fostering an effective green payment program, 2008, #P2003-21**

**Abstract:** The creation of the Conservation Security Program (CSP) was greeted with enthusiasm by farmers. This project looked at how well CSP worked out in practice.

**Improving the impact and benefits of USDA research and grant programs to enhance mid-size farm profitability and rural community success, 2009, #P2003-14**

**Abstract:** A review of four USDA grant programs in 2001 and 2002 found that only a small percentage of the programs served the needs of small and mid-size farmers.

**Leveraging linkages to the Conservation Security Program, 2006, #P61-2003**

**Abstract:** The joint Iowa-Minnesota project examined ways in which the newly created Conservation Security Program (CSP) could be best integrated with existing local resource management efforts.

**Local food, local policy: A case study on engaging policy makers in the development of their foodshed, 2008, #PSP2007-03**

**Abstract:** The purpose of this project was to conduct a series of meetings and programs to assess the knowledge, understanding and capacity of Johnson County, Iowa, policy makers to improve their local food system and to provide opportunities for stakeholders in the food system to interact and learn.

**Reducing local regulatory barriers to local foods: The ‘Municipal Zoning for Local Foods in Iowa’ guidebook, 2015, P2014-01**

**Abstract:** A guidebook was created to help municipal officials navigate the legal, political and economic challenges of encouraging urban agriculture in their communities.

**Renewable energy feed-in tariffs: potential opportunities for Iowa’s farmers, 2012, #P2010-02**

**Abstract:** Policy makers seeking a new tool to encourage investment in alternative energy sources may consider feed-in tariffs as incentives to promote adoption of solar and wind power options in Iowa.

**SALT Initiative II, 2013, #P2012-04**

**Abstract:** The continuing Sustainable Agricultural Land Tenure (SALT) project broadens its focus to consider the many sorts of ownership of Iowa farmland, and how best to approach each category of owner/operator. The goal is to encourage adoption of a suite of conservation practices through educational and legal means.

**Shaping a functional and sustainable biofuels industry through bridging industrial needs with farmer production capabilities, 2010, #P2009-06**

**Abstract:** In order for the biofuels industry to survive and succeed, it will need the cooperation of Iowa farmers to supply biomass. Farmers have concerns about production that need to be addressed in order to create a sustainable industry.

**State policy alternatives for biofuels industry support of sustainable production of biofuels feedstocks, 2011, #P2008-03**

**Abstract:** The project examined six public policy options that reward linking the growing bioeconomy to environmental stewardship.

**Survey of Iowa organic farmers on the impact of the National Organic Program, 2006, #P08-2003**

**Abstract:** More than 400 Iowa organic farmers were asked how the implementation of the USDA-National Organic Program (NOP) rules in 2002 has affected their farming operations.

**Sustainable agricultural land tenure and risk management for extreme climatic events, 2015, P2013-05**

**Abstract:** The researchers studied how landowners and farmers are working to improve conservation and protect productivity, soil health and water quality while facing extreme weather. The project results yielded more future research questions than definitive answers as to how non-owner landlords and their tenants can work together to safeguard the land and its productivity.

**Taking the next step—Building a platform for performance-based stewardship payments, 2008, #P2003-15**

**Abstract:** Policy makers need a way to measure environmental results of farming practices, and incorporate those outcomes into farm policy. Modeling tools can help, but are not yet adequate to serve as performance-based policy guidelines. Roundtables can help diverse groups of people explore a new concept like performance-based policies.

**Women, land and legacy: Agricultural policy for changing land ownership, 2007, #P10-2006**

**Abstract:** Iowa farm women offer their opinions on how the next federal Farm Bill should be crafted.

## Soil and water quality

### **Animal manure/municipal yard waste composting project in Wright County, Iowa, 1998, #96-06**

**Abstract:** Two of Iowa's waste disposal problems are manure from livestock confinement facilities and yard waste. Considered separately, they present special difficulties in disposal, but when combined they may make a good compost material suitable for use by gardeners and landscapers.

### **Column study to access bioretention cell filter mixtures for urban stormwater management, 2014, #ESP2013-01**

**Abstract:** The study examined several options for material placement in bioretention cells to keep water cleaner and cut down on pollution into urban storm sewers.

### **Constructed wetlands to reduce agricultural chemical transport to water resources, 1999, #95-48**

**Abstract:** This project was part of a larger five-year, multi-phase research and demonstration effort to study water quality and agricultural drainage wells (ADWs). The goal was to evaluate the use of constructed wetlands for treatment of subsurface drainage prior to release to groundwater through ADWs and to develop design and operation criteria for these treatment wetlands.

### **Demonstration of a an agroforestry system to minimize pollution hazards from land application of treated municipal sludge, 1998, #95-47**

**Abstract:** Iowa has over 700 communities that generate municipal biosolids by various treatment means. These biosolids contain valuable nutrients. In this study, municipal biosolids are applied to trees, perennial grasses, and corn/soybean crops in an alley cropping (repeated tree strips combined with crops) system. The goal is to produce economical quantities of biomass and grains with reduced use of fossil fuel-based fertilizers and minimal environmental impacts.

### **Drainage water quality impacts of current and future agricultural management practices, 2013, #XP2011-04**

**Abstract:** Researchers examined how crop tillage, rotation or crop residue removal can affect the chemical composition of water draining from farm fields.

### **Effect of tillage, crop rotation, and the innovative nitrogen and pesticide management practices on productivity, sustainability, and water quality, 1997, #93-14**

**Abstract:** Better management practices can improve nitrogen (N) uptake and possibly reduce nitrogen leaching to groundwater. More efficient herbicide use can decrease or eliminate the herbicide leaching losses to water sources. In this project, the effects of seven N management practices on water quality were evaluated after collecting data from 40 experimental plots. Lower rates of N application and strip and hay cropping systems helped produce lower concentrations of NO<sub>3</sub>-N in the shallow groundwater in comparison with the higher rate of N application. Also, banding of herbicides has resulted in lower herbicide losses to shallow groundwater. The use of the late spring NO<sub>3</sub>-N test (LSNT) and strip cropping show a great deal of promise to protect water quality.

### **Effective high-speed, high-residue row crop cultivation, 1997, #93-01**

**Abstract:** Banding of herbicides linked with mechanical cultivation has been touted as a way to decrease dependence on chemical inputs in farming. Tests on a farm near Boone, Iowa, were used to determine the effects of cultivator design and speed when combined with the banding of chemicals to control weeds. Three cultivator styles, two speeds, and two herbicide bands (19 and 38 cm.) were tested. Results showed that faster cultivation speeds did not harm weed control or crop yields. There was no difference between

yield in a broadcast treatment and that of a cultivator treatment in conjunction with a wide band of herbicide when disc hillers were used.

**Environmental impacts of the use of poultry manure for agricultural production systems, 2002, #99-68**

**Abstract:** Iowa is among the top national producers of poultry, with accompanying public concerns about the proper disposal of poultry wastes and associated nonpoint source pollution. This project investigated the effects of poultry manure application on surface and groundwater quality.

**Evaluating the effectiveness of restored wetlands for reducing nutrient losses from agricultural watersheds, 2004, #01-60**

**Abstract:** Scientists examined the effectiveness of recent wetland restorations and land use conversions (set-asides) for reducing nutrients in agricultural runoff into the Iowa Great Lakes.

**Fertilizer placement for ridge-till and no-till systems, 1998, #95-55**

**Abstract:** Uncertainty about cost-effective methods of broadcast vs. subsurface fertilizer application and soil test interpretation for ridge-till and no-till systems may be a major factor in the slow adoption or abandonment of these systems by Iowa farmers. Broadcast fertilizer is cheaper than banding, but seems inefficient because fertilizers are not incorporated (no-till) or incorporated too late (ridge-till) for plant needs. From a soil and water quality perspective, the lack of incorporation of fertilizers, especially phosphorus fertilizer, could hamper system benefits in reducing nutrient losses in water runoff because, although reduced, the runoff contains more soluble nutrients.

**Impacts of managed grazing on stream ecology and water quality, 2006, #U19-2002**

**Abstract:** The project measures and analyzes the varying effects different grazing systems have on the nutrients that appear in surface runoff.

**Linking soil and water quality with crop performance across a continuum of tillage and management strategies: Enhancing sustainability through soil health-promoting practices, 2015, #XP2014-04**

**Abstract:** Comparisons across the three Iowa research sites, with histories ranging from three to 17 years, allowed the research team to examine the effects of crop rotation history (short vs. longer) and system (organic vs. conventional) on weed management, crop productivity, soil quality and soil microbial communities (Year 1 of a 3-year project).

**Quantifying the effects of alternative surface inlet protection strategies on water quality, 2015, E2014-08**

**Abstract:** Subsurface drainage systems with surface inlets are widely used to divert water in crop producing areas, but pose problems because they can allow unfiltered, sediment-laden water to travel quickly to other waterways. The project tested several modest, uncomplicated inlet protection practices with potential to keep nutrient and sediment flows in check.

**Reconnecting Iowa riparian buffers with tile drainage (1), 2014, #E2010-01**

**Abstract:** Changing the configuration of tile drainage structures to allow subsurface flow through a riparian buffer could offer farmers another option for nitrate removal. This project examined the effects of using tiling and buffers to enhance the denitrification process.

**Reconnecting Iowa riparian buffers with tile drainage (2), 2014, #E2013-13**

**Abstract:** This is a continuation of an earlier pilot project (E2010-10) where tile discharge was rerouted to allow subsurface flow through an established riparian buffer. This third year of observations allowed researchers to gather more data on nitrate removal using this system.

**Simple and fast detection of *E. coli* in agricultural water sources and runoff, 2015, #ESP2014-02**

**Abstract:** Investigators conducted experiments on the viability of new, quicker tests for the presence of *E. coli* in water supplies. Their preliminary data suggested that bacteriophages (viruses infecting bacteria) offer potential for detection of bacteria if the right medium can be found for testing.

**Soil carbon quality and interactions in Iowa wetlands, 2003, #01-47**

**Abstract:** Most of Iowa's wetlands have been drained, tilled, and cultivated. This project looked at how carbon sequestration has been affected and what might be done to help improve the situation. Researchers collected GPS coordinates of all the sites samples so that in the future someone can return to the sites and determine the amount of change in organic carbon or other properties that have occurred over time.

**Soil health and productivity in riparian grass buffers: A re-evaluation after 13 years, 2015, #E2014-07**

**Abstract:** In 2001, soil health and productivity were surveyed in riparian grassland buffers adjacent to Bear Creek in northern Story County, Iowa. The investigators resampled these 24 plots in 2014 using the same techniques to see what changes had resulted from the conservation practices applied in the intervening years.

**Understanding the potential of phosphorus transport to water resources via leaching, 2004, #02-40**

**Abstract:** Improved management of phosphorus (P) from both manure and fertilizer sources is important because of surface water quality concerns. This study considers possible P loss via leaching through the soil and examines the dynamics of the adsorption/extraction process.

**Understanding soil organic matter change: Modeling root and soil interactions across soil landscapes, 2014, #E2012-11**

**Abstract:** The project looked at bioenergy feedstocks and how they might be employed to improve soil properties, specifically soil structure and soil carbon in the form of organic matter content. In this study, switchgrass showed the greatest promise for improving soil qualities.