



# C-FAR Connection

Illinois Council on Food and Agricultural Research

## C-FAR Website

### Showcasing Illinois' Stakeholder-driven Food and Agricultural Research Program

Research funded by the State of Illinois through the Illinois Council on Food and Agricultural Research (C-FAR) is benefiting Illinois and its citizens from the north shores of Chicago to the Shawnee National Forest. The C-FAR website showcases this unique program, which is grounded in a strong partnership among State of Illinois officials, food and agricultural stakeholders, and Illinois' research community.

"The C-FAR website is a critical element of our organization's communication and outreach activities," said LeAnn Ormsby, communications director. "It is a pleasure to maintain and improve its content for the benefit of our members and all Illinois citizens."

The C-FAR website is located at [www.ilcfar.org](http://www.ilcfar.org). On the main page, site visitors will find lead-ins to highlights of membership and research activities and a calendar of events. At the top of the page, are



links to sections titled what's new, organization, calendar, news, research, links, and join C-FAR.

### What's New

C-FAR current event information can be found in this section. Executive Administrator Kraig Wagenecht provides his monthly updates to keep members and others up-to-date on C-FAR activities. Also included are highlights of current or recent

membership and research program activities.

### Organization

Why was C-FAR established, and how it is organized? This section provided a wealth of information on the organization, including C-FAR's mission statement, a historical perspective, bylaws, enabling legislation—the Food and Agriculture Research Act, and more. Board of directors,

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## C-FAR Connection

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## Greetings

### ASSOCIATIONS—IT'S ABOUT THE MEMBERS

*As·so·ci·a·tion—Abbr. assn., assoc.* An organized body of people who have some interest, activity, or purpose in common; a society; league.

Sounds exactly like C-FAR doesn't it? Our members certainly have a common interest in food and agricultural research, engage together in activities, and share in our association's high purpose of developing a viable food and agricultural research program in Illinois. The association itself, however, is not important; it is the "body of people" (our members) who comprise our association, which is most important. For C-FAR, just having a membership is far from what we desire. We are fortunately and uniquely structured to directly and purposefully engage our members.

This newsletter's topics reminded me of the great responsibility we have in meeting the needs and expectations of our members. The articles in this newsletter provide an excellent snapshot of examples showing how we strive to do so. Let me use three of the articles to illustrate my point.

*C-FAR's website.* Our website directly serves our membership. It is a comprehensive site; a resource of information that is exhaustive in nature. An overriding factor in its development is to provide important association news, research details, and full accountability—an accountability we believe is an inherent responsibility of being entrusted with research investments by the State of Illinois. The State, along with our members, who devote countless volunteer hours to fulfilling our purpose, deserve nothing less. In addition, we hold as a guiding principle that effective member engagement is possible only through members who are informed.

*TIPS for engaging in meetings.* Members of our association should expect meetings that are organized, that provide for free exchange, and that have a clear purpose. I can assure you we will continue striving to hold meetings in which members feel a clear sense of value for having attended. Effective meetings also require participants who appropriately engage. The list of "TIPS" offered is intended to be of benefit for all of our members.

*C-FAR Day.* A viable association, regardless of its purpose, should afford its members opportunities that are "outside the meeting room." C-FAR is uniquely positioned to do so with our focus being research. C-FAR Day was designed to avail our members of the opportunity to directly engage in research in progress. Often, this is research that our members have identified as of the highest priority and which should be funded.

Very few associations benefit from having such an active and diverse membership as C-FAR. Many associations simply send annual dues notices, hold an annual meeting, and send a couple of updates. Not C-FAR. Our specific focus and common purpose provide a meaningful platform to make a difference. Together, we will continue to build a viable publicly-funded food and agricultural research program in Illinois!

Alan Puzey  
Chairman of the Board



ALAN PUZEY, CHAIRMAN  
C-FAR BOARD OF DIRECTORS

**C-FAR RESEARCH FUNDING IS STATE-APPROPRIATED GENERAL REVENUE FUNDS.**

**C-FAR GRATEFULLY ACKNOWLEDGES THE STATE OF ILLINOIS—ROD R. BLAGOJEVICH, GOVERNOR.**

## C-FAR Website

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working group leaders, committee members, and Organizational and Affiliate members are listed. A member handbook is also available to assist members on how best to engage in and contribute to C-FAR.

### Calendar

Important dates are provided in this section, including meetings of the membership, board meetings, working group meetings, and C-FAR Day.

### News

Visit this section for the latest press releases, newsletters, and annual reports. Past news releases and publications are posted as well, providing a significant resource for information.

### Research

The most valued section of the website to many, this section provides information on C-FAR's research programs. An overview of C-FAR's research programs (External Competitive Grants Program, university internal programs, and strategic research initiatives) is provided, along with information on C-FAR's research focus areas, research partner universities, and research portfolios. Researchers access this site for details of proposal submission to the External Competitive Grants Program and to submit the electronic portion of their research proposals.

Visit the research final reports area at [www.ilcfa.org/research/public.cfm](http://www.ilcfa.org/research/public.cfm) to view reports containing key outcomes and impacts of completed

research. A search form allows projects to be found based on research category, research focus area, project number, institution, research program, initial funding year, and/or principal investigator. Whether one's interested in soybean production, dairy cattle, specialty markets, nutrition, food safety, or water quality, the latest research in a wide variety of food and agricultural areas can be found.

### Links

Wish to learn more about C-FAR's Organizational and Affiliate members? This section provides links to these stakeholder organizations' and research entities' websites, if available.

### Join C-FAR

Membership guidelines and an easily accessible form are provided to encourage interested organizations and individuals to support C-FAR and a viable, publicly-funded food and agricultural research program in Illinois.

"At a recent board meeting, we were provided with a virtual tour of the website. I am impressed with the comprehensive, valuable information provided," said Larry Fischer, membership chair. "Its content is so educational that we've made efforts to direct secondary school and community college students to the site. Their learning experience, in addition to the knowledge gained by all individuals employed in the food and fiber industry, can be demonstrably enhanced by searching this site."

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## Strategic Research Initiative Program



The Strategic Research Initiative (SRI) Program currently supports the Illinois Livestock Integrated Focus Teams (IL LIFT) SRI and Biomass Energy Crops for Power and Heat Generation in Illinois SRI. The following provides key activities and accomplishments of these research initiatives over the past year.

### ILLINOIS LIVESTOCK INTEGRATED FOCUS TEAMS

This SRI is addressing the economic and social challenges facing Illinois' livestock industry. The initiative focuses on livestock facility siting, using byproduct feeds in livestock feeding programs, pasture-based forage systems, and animal identification for enhanced food quality and monitoring livestock health. Michael Hutjens, professor of animal sciences at the University of Illinois at Urbana-Champaign (UIUC), leads the initiative.

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## Strategic Research Initiative Program

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### Livestock Facility Siting in Illinois

Illinois livestock operations face requirements for manure handling, consumer acceptance, community reaction, and economic impact on their facilities. Researchers are investigating compliance by current livestock facilities, reasons for noncompliance, and ways to improve compliance and its impact on the community.

Researchers completed a site survey of swine concentrated animal feeding operations. Site visits to 36 farms indicated that nearly half have facility management challenges that, unless addressed, will likely have an adverse impact on their economic viability in the near future. Over the next year, research efforts will focus on the development of management tools to improve recordkeeping and planning, to improve feedlot runoff control for small- to medium-sized operations, and to improve producer access to environmental regulations and applications.

### Using Illinois Byproduct Feed in Livestock Feeding

New ethanol plants are being constructed and going into production, making byproduct feeds more abundant. Researchers developed an interactive website to inform Illinois livestock producers about the use of dried and wet distiller's grains in livestock diets. Information on distiller's grains and their utilization in livestock diets is available at <http://ilift.traill.uiuc.edu/distillers>. Information on ethanol plants in or within a 100 mile radius of Illinois is also provided.

### Using Illinois Forages Based on Pasture-Based System

This project focuses on determining the economic value of integrating animal grazing systems into conventional short-term crop

rotation. Forage testing indicates forage quality of managed grazing systems is sufficient to maintain a cow-calf enterprise. High-production enterprises such as lactating ewes and dairy cows or growing calves may require energy supplementation to support desired performance. While economic data analyses are ongoing, preliminary results suggest complete utilization of annual forages are required to compete with perennial forages.

### Animal Identification for Enhanced Food Quality and Monitoring Livestock Health

Animal identification to improve animal health, provide traceability of livestock products, and enhance food quality is a national concern. Micrometer scale electronic devices are being tested as a method for permanent animal identification and physiological monitoring, with an emphasis on body temperature tracking in real time. ID devices that also measure body temperature have been shown to track fever as an indicator of animal disease. Researchers examined 40 dairy cows, finding that the sampling frequency needs to be increased to reliably predict certain disease events. External factors such as heat stress were found to influence data measurement, and they should be included in any predictive model.

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### BIOMASS ENERGY CROPS FOR POWER AND HEAT GENERATION IN ILLINOIS

This SRI aims to provide Illinois with the foundation and technology leadership for large-scale cultivation of biomass crops. Researchers are focusing on the use of *Miscanthus*, a perennial rhizomatous grass, as a potential renewable energy source and

profitable alternative crop for Illinois producers. Stephen Long, professor of crop sciences and plant biology at UIUC, leads the initiative.

### Field Trials

The University of Illinois South Farms has six blocks, each containing one 0.5 acre plot each of *Miscanthus*, switchgrass, and corn/soybean rotation. Yield analysis continues in the 0.25 acre trials established at Dixon Springs, Urbana, and DeKalb. Averaged across the three sites, peak dry mass of *Miscanthus* compared to switchgrass was 21 verses 7 tons/acre in 2004 (a wet year) and 14 verses 3 tons/acre in 2005 (a dry year). Agronomic characteristics, including yield variability, establishment, and nitrogen response, are being evaluated at multiple sites.

### *Miscanthus* Breeding and Improvement

*Miscanthus x giganteus* (the plant form used in the SRI) is a sterile hybrid. It has been grown in Denmark for over 40 years with no incidence of invasiveness into surrounding fields. Currently existing *Miscanthus x giganteus* germplasm is limited in its genetic diversity, and has not been subjected to selection for enhanced yield or adaptability to cultivation in the Midwest. To create new germplasm, researchers are conducting hybridizations between *M. sinensis* and *M. sacchariflorus*.

Researchers are evaluating tissue culture-regenerated plants transplanted to field plots for possible variations. Chromosome doubling of *Miscanthus* plants is also being investigated.



### Development of Genetic Engineering Techniques

New tissue cultures using immature plumes from *Miscanthus* plants have been established. Regenerated plants have survived transplantation to field plots. Research to change the genetic makeup of plants has been initiated, but to date no confirmed transformants have been identified. A transformation system will provide a basis for introduction of traits such as resistance to disease, to pests, and to herbicides.

### Soil Carbon and Gas Emissions

This project focuses on the short-term influence of biomass crop production on organic carbon contents of Illinois soils and the global warming potential of biomass-crop and row-crop production systems.

Biomass crop establishment has not reduced soil organic carbon. By year four, *Miscanthus* has achieved sequestration rates of 0.13 tons/acre/yr, and switchgrass achieved rates of 0.09 tons/acre/yr. Increases in soil organic carbon under biomass crops were due to accumulation of particulate organic matter carbon in the top soil. Ammonium-nitrogen content decreased through season in the corn soil after N fertilization, while there was no clear change in the biomass crop soils. When global warming potential was estimated, the row-crop system had significantly higher values than *Miscanthus* or switchgrass. *Miscanthus* and switchgrass production systems have proven to be net absorbers of greenhouse gases.

### Water Resource Implications

Researchers are evaluating water usage and nitrogen leaching in biomass crops contrasted against a conventional

corn and soybean rotation. Collection devices were placed at a depth of 20 inches in corn/soybean and switchgrass plots. The nitrogen flux in the corn/soybean plots was higher than in the switchgrass plots, with most of the nitrogen leaching as nitrate. Results so far suggest that switchgrass would contribute almost no nitrate to drainage water, an important benefit for the water quality of Illinois lakes and rivers.

### Propagation and Eradication of *Miscanthus x giganteus*

*Miscanthus* rhizomes were evaluated for tolerance to cold storage. When stored for 0–4 months at 39°F, rhizome survival was high, ranging from 83% to 100%. In identifying optimal planting methods, 40g to 60g rhizomes planted at a depth of about 4 inches offered the best combination of high yield with less plant-to-plant variation. Four weed-control studies were conducted to evaluate the tolerance of *Miscanthus* plants to a variety of preemergence and postemergence corn herbicides. The studies showed no differences in phytotoxicity among treatments.

### Harvesting and Preprocessing Technologies

Small ¼-acre plots of *Miscanthus* and switchgrass have been harvested using a self-propelled haybine with a sickle bar cutter head. A small square baler was used to bale the crops. In February, a 10-acre plot was harvested using a large square baler, which was more efficient. A rotary cutter/mower conditioner is being sought for testing. *Miscanthus* and switchgrass are being processed into pellets for possible use in biomass furnaces. *Miscanthus* has initially proven difficult to pellet. Pellets can be made from switchgrass very effectively.

### Thermochemical Conversion of Biomass to Fuel

*Miscanthus* is being evaluated for the feasibility of converting it to an oil-based fuel. To date, a thermochemical process has been used to obtain oils from *Miscanthus* with a positive energy balance.

### Economic Analysis

Yields and associated costs of producing *Miscanthus* and switchgrass were simulated for each county in Illinois. Revenues from using the biomass crops for electricity generation in existing power plants were also estimated to determine profitability and to see how it varies depending on location.

Simulations indicate *Miscanthus* profitability and opportunity costs vary across Illinois and depend heavily on transportation costs, harvesting costs, and yields. Switchgrass is not likely to be economically competitive with *Miscanthus*. Neither switchgrass nor *Miscanthus* is competitive with coal at current coal prices. Incentives from environmental, agricultural, or energy policy are needed to make *Miscanthus* competitive for use by power plants. One of these benefits is through soil carbon sequestration. *Miscanthus* has a much higher potential to sequester carbon in the soil as compared to other crops.

### Social Acceptability of Energy Crops

Surveys were conducted in northern, central, and southern Illinois to determine producers' knowledge and attitudes toward the production of biomass energy crops. Results of the survey indicate that producers have concerns *Miscanthus* being a possible invasive exotic species. Many are interested in its economic potential.

## Things Important for Participating Successfully at C-FAR Meetings

Larry Fischer, membership chair

An important cornerstone of C-FAR is that we intentionally and fortunately comprise individuals from diverse backgrounds and



experiences. Members represent crop and livestock enterprises, agribusinesses, food service and processing companies, green industry organizations, conservation groups, government agencies, research entities, and more. We are proud of this diversity and draw upon each other's knowledge to ensure Illinois has a vibrant, publicly-funded food and agricultural research program to support these important sectors.

With the C-FAR membership having such diverse interests, it is critical we collaborate as efficiently and effectively as possible. The following are a few points to keep in mind while participating at C-FAR meetings.

- Don't be afraid to take notes; write things down so you don't forget good ideas and any follow-ups you would like to make.
- Be attentive while others are speaking. Do not carry on disrupting side conversations with your companions.
- Be more than a listener (only 10 percent of your thinking time is required to hear what is being said—use the other 90 percent for relating what is being said to a framework of thought including your own experiences).

- In addition to the importance of being an effective listener, an undervalued and underutilized skill is being a questioner. Don't be afraid to ask questions. Especially in C-FAR, there may be scientific terms that should be explained, but such explanations may be prompted only by a question.
- Be recognized by the meeting leader before you speak.
- Think out what you want to say, and say it concisely in as few words as possible. Remember that "comprehensive brevity" is appreciated by fellow meeting attendees.
- Go to each meeting determined to learn something and to do your part by making a worthwhile contribution. Do not pass up the opportunity to make a contribution if you have one to make. The vast majority of C-FAR decisions are made by those who attend meetings and succinctly contribute to the discussion.
- Do not monopolize a session. (You can't learn as much while you are talking.) Meetings should not be a "bully pulpit" to express one's philosophy. Present your thoughts in a factual manner.
- Go over your point before you speak to make certain it is pertinent to the discussion.
- Do not waste time bickering over trivial points.
- Speak loudly enough to be heard and slowly enough to enunciate each of your words distinctly.
- Don't feel you have "lost face" if your ideas are partially challenged or even rejected.

- Do not disagree with a fellow participant until you fully understand his or her point of view.
- Meeting participants can most appropriately engage with an effective leader. The leader should be a discussion facilitator, and should not take advantage by using his or her leadership position to push personal views.
- While consensus is the preferred C-FAR decision-making model, it may not always be possible. Striving for consensus should not unduly delay decisions and "wear out" meeting attendees. The alternative to consensus is majority opinion.

We provide the above suggestions to benefit C-FAR members in their discussions so that all voices at the table are heard, and meeting objectives are accomplished in the most effective manner possible.

On behalf of the C-FAR Board of Directors, I extend gratitude to our members who dedicate countless volunteer hours each year in support of stakeholder-driven food and agricultural research via C-FAR to benefit Illinois. Together, while being mindful of how we can successfully participate, we will enable C-FAR to continue making a profound impact on our state.

*Note: The above bulleted list was modified from a publication of the Alpha Gamma Rho National Fraternity.*

## Join us for C-FAR Day!

C-FAR Day at Southern Illinois University Carbondale will be held from 9:30 AM to 3:10 PM on Tuesday, November 14. This special event provides a unique opportunity for C-FAR members to hear firsthand from researchers about C-FAR-funded research taking place at the university.

“C-FAR Day has proven to be a very meaningful event to directly connect stakeholders with C-FAR-funded researchers. There is no substitute for having researchers present their work at their research facilities,” said Nels Kasey, C-FAR research chair. “Researchers, in turn, appreciate having the opportunity to make such presentations for the stakeholders they serve. It truly is a win-win situation, and we look forward to being on SIUC’s campus for this year’s event.”

Research to be highlighted during C-FAR Day includes:

Hoop Structures for Finishing Hogs in Southern Illinois  
*Gary Apgar, associate professor of animal science*

Enhancing Omega-3 Fatty Acids in Milk  
*Amer AbuGhazaleh, assistant professor of animal science*

Cost and Environmental Benefits of Conservation Tillage  
*Luba Kurkalova, assistant professor of agribusiness economics*

Vegetable Crop Diversity in Illinois  
*Alan Walters, associate professor of horticulture*

Fescue Toxicosis in Beef Cattle  
*Karen Jones, associate professor of animal science*

Health Benefits of Soy Products  
*Bill Banz, professor of food and nutrition*

Protein Source and Weight Loss  
*Allan Higginbotham, assistant professor of food and nutrition*

“All too infrequently are skills of university researchers brought to bear on real-world problems in food and agriculture arenas. But within C-FAR, scientists and stakeholders partner together to identify practical solutions to everyday challenges. It is clearly a win-win collaboration that benefits all citizens of Illinois,” said John Russin, Associate Dean for Research of the SIUC College of Agricultural Sciences.

Invitations to C-FAR Day are being mailed to all C-FAR members during mid-October. Those interested in attending are asked to RSVP to the C-FAR office by Monday, November 6.

C-FAR has been instrumental in encouraging research that addresses major issues that will enhance the economic vitality and quality of life of the people and stakeholders we serve in Illinois. Over the years, C-FAR funding has made the difference between Illinois being a good agriculture and food-producing state to that of being a great agriculture and food-producing state. The C-FAR focus and the C-FAR funds have made the difference.

– Gary Minish, Dean of the SIUC College of Agricultural Sciences

## Websites to Watch

### C-FAR

[www.ilcfar.org](http://www.ilcfar.org)

Your headquarters for C-FAR news and information on funded and completed research.

### NAT TOOLS FOR GOOD HEALTH

[nat.crgq.com](http://nat.crgq.com)

A source for analyzing diet and food choices.

### ILLINOIS CENTER FOR SOY FOODS

[www.soyfoodsillinois.uiuc.edu](http://www.soyfoodsillinois.uiuc.edu)

A resource for consumers on soy foods and nutrition.

### FARM.DOC

[www.farmdoc.uiuc.edu](http://www.farmdoc.uiuc.edu)

Provides producers and other agricultural professionals with decision-making information and analysis tools.

### MARKETMAKER

[www.marketmaker.uiuc.edu](http://www.marketmaker.uiuc.edu)

An interactive mapping system that locates businesses and markets of agricultural products in Illinois, which provides an important link between producers and consumers.

### ALTERNATIVE CROPS FOR ILLINOIS

[www.sws.uiuc.edu/data/altcrops](http://www.sws.uiuc.edu/data/altcrops)

Helps producers identify and find information on potential alternative crops.

### ILLINOIS IPM ONLINE

[www.ipm.uiuc.edu](http://www.ipm.uiuc.edu)

An environment for learning about integrated pest management.

### ILLINOIS WATERSHED MANAGEMENT CLEARINGHOUSE

[www.watershed.uiuc.edu](http://www.watershed.uiuc.edu)

Helps groups create and implement a plan to address local watershed issues.

### ILLINOIS TRAILL

[www.traiill.uiuc.edu](http://www.traiill.uiuc.edu)

Organizes livestock research, information, and expert services.

# C-FAR Connection

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## calendar 2006-2007

- November 8 **Board of Directors Meeting (Urbana)**
- November 14 **C-FAR Day (Southern Illinois University Carbondale)**
- January 3 **Board of Directors Meeting (Urbana)**
- February 20 **Annual Meeting (Northfield Inn, Suites & Conference Center, Springfield)**
- February 28 **Board of Directors Meeting (Urbana)**
- March 5-7 **Working Group Meetings (Champaign-Urbana)**



Please call the C-FAR office or check the calendar on the C-FAR website at [www.ilcfar.org](http://www.ilcfar.org) for further details.