



## Introduction

The past year has seen much discussion and coverage of the “bioeconomy.” Ethanol plant construction continues across the state, and government initiatives supporting biofuels development efforts such as the Iowa Power Fund have multiplied. With grants and agreements with private and public sector interests such as ConocoPhillips, DuPont, and the U.S. Department of Energy, Iowa State University is a major center of bioeconomy research. ISU Extension, in keeping with its mission to promote healthy people, environments, and economies, has been monitoring and informing these developments.

In March and April 2007, ISU Extension held a series of meetings across the state that provided opportunities for Iowans to voice their thoughts on current and future bioeconomy initiatives. The discussion groups, held in 96 counties and attended by nearly 1,000 people, were designed to collect information that will help Extension to serve its stakeholders' interests as it works to support development of bioeconomy initiatives that are socially, environmentally, and economically beneficial. The results of that effort are compiled in a report entitled *The Bioeconomy in Iowa: Local Conversations*.<sup>1</sup>

---

1 *The Bioeconomy in Iowa: Local Conversations* is available on-line at <http://www.extension.iastate.edu/Publications/SP307.pdf> or at any county extension office or through the Extension Distribution Center on the Iowa State University campus.

This report builds on the *Local Conversations* effort by drawing on data from the 2007 Iowa Farm and Rural Life Poll. The Iowa Farm and Rural Life Poll, created through a partnership of Iowa State University Extension, the Iowa Agriculture and Home Economics Experiment Station, and the Iowa Department of Agriculture and Land Stewardship, is one tool that Extension uses to keep abreast of issues that are important to the citizens of rural Iowa. As the State of Iowa, Iowa State University, and private sector actors ramp up research and development initiatives on biorenewable fuels and other products, and various factors fuel a surge in ethanol production, Iowa's farmers and farm families find themselves at the epicenter of potential impacts, both positive and negative. The 2007 Farm Poll asked a series of questions that sought to understand how Iowa farm families view key aspects of recent developments related to the bioeconomy.

Many of the Farm Poll findings echo those of the *Local Conversations* report, and strengthen our understanding of stakeholders' thoughts and opinions about current trends and future directions. This report consists of two sections. The first highlights findings that are common to the two research efforts. The second section examines some of the implications of the Farm Poll's findings in terms of future policy and Extension efforts relating to the bioeconomy. Because the Farm Poll is a survey of randomly selected farmers from across the state, where there are commonalities among results, Farm Poll data can serve to compliment the findings from the *Local Conversations* and bolster

conclusions and recommendations for future Extension actions.

## Biofuels and Beyond: Opportunities and Challenges

One of the most important overall conclusions from the *Local Conversations* is that Iowans have great hopes for positive impacts from bioeconomy-related growth as well as practical concerns about possible negative outcomes of such growth. The Farm Poll results back that conclusion, and underscore the presence of much uncertainty about potential developments, especially regarding areas such as cellulosic ethanol and the possible environmental impacts of ethanol production.

### Opportunities

#### Employment and Economic Growth

The *Local Conversations* revealed that Iowans see the bioeconomy as an engine for economic growth that could revitalize flagging rural areas, and increases in high-quality

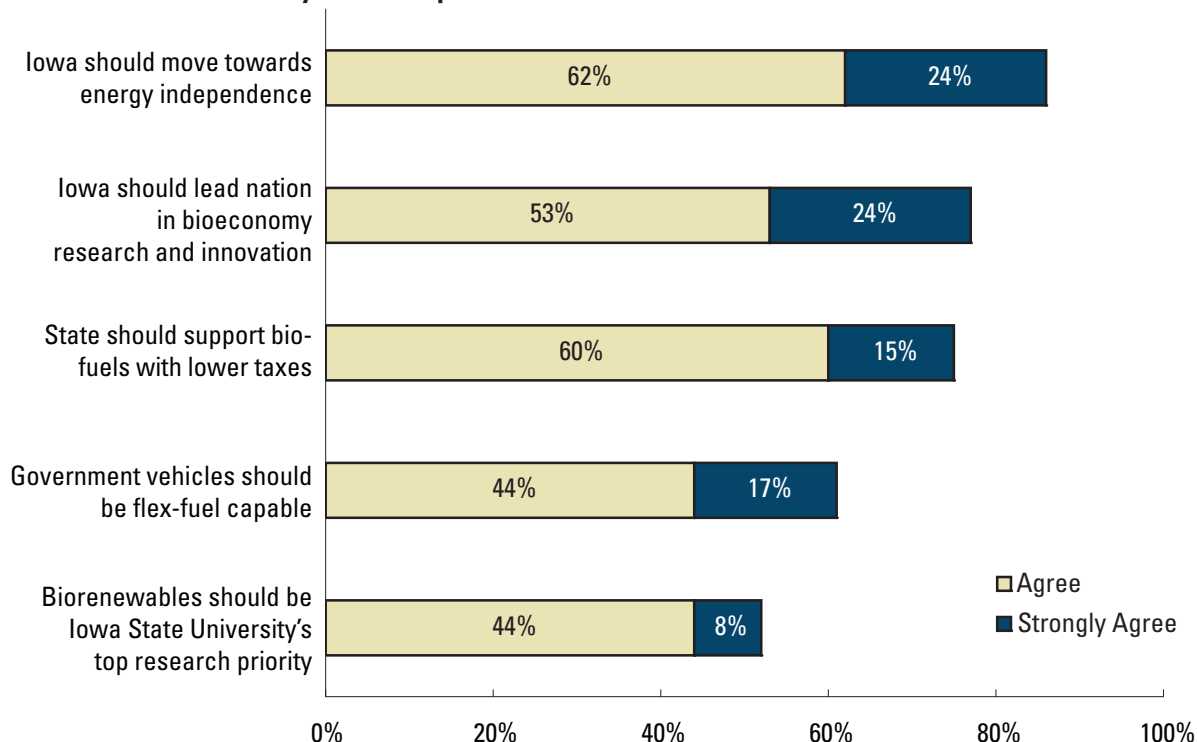
employment were viewed as a primary measure of that growth. Farm Poll results echo that conclusion: 79 percent of farmers agreed or strongly agreed that ethanol plant employment would provide an economic boost to rural areas.

Some have voiced concerns about competition for grain between ethanol plants and the livestock industry. There is also a good deal of optimism, however, related to the potential for the distillers grains and solubles (DGS) co-product of ethanol production to serve as a driver of increases in livestock production. Fifty-nine percent of farmers agreed that DGS could help to revive the cattle industry in Iowa, although 31 percent were uncertain about that possibility.

#### Iowa's Leadership in the Bioeconomy

Another key finding of the *Local Conversations* was that Iowans wish to see Iowa become a world leader in biofuels development and play an important role in decreasing dependence on foreign oil. Farm Poll findings reflect that leadership sentiment in a number of ways.

Figure 1. Iowa's bioeconomy leadership



Iowa farmers endorsed Iowa's becoming the nation's leader in bioeconomy research and innovation (77 percent) and production of biodegradable corn-based products (84 percent). Eighty-six percent favored movement toward energy independence (Figure 1).

Importantly, farmers also supported alignment of state policies with those leadership goals. Seventy-five percent of Farm Poll participants agreed that the state should support biofuels through tax breaks until broader public acceptance is attained. Sixty-one percent agreed that all government vehicles should be capable of using E85 (85 percent ethanol) and B20 (20 percent biodiesel) fuels, although 26 percent indicated uncertainty on this question. Fifty-two percent of respondents agreed that Iowa State University should place biorenewable energy at the top of its research agenda. Again, however, a substantial number of farmers—33 percent—were uncertain of their support for such a shift in research priorities.

Overall, Farm Poll findings support the conclusions from the *Local Conversations* meetings regarding potential opportunities related to growth in biofuels production and related sectors. Notable is the degree of backing for state and university action: Farm Poll participants appear to support significant shifts of resources to bioeconomy development efforts. This support, however, is not unconditional: 75 percent of farmers agreed that biofuels research should not come at the expense of traditional crop and livestock research.

## Challenges

This year's Farm Poll examined many of the challenges that the *Local Conversations* identified as widespread concerns. Both efforts point to a number of areas of apprehension about potential negative impacts stemming, in particular, from increases in ethanol production. Iowans had many questions about possible harmful effects of that expansion

on the environment, farm structure, certain sectors of the economy, alternative energy sources, and energy conservation efforts. Numerous Farm Poll questions address these issues, and serve to strengthen our understanding of how important they are to farm families across the state.

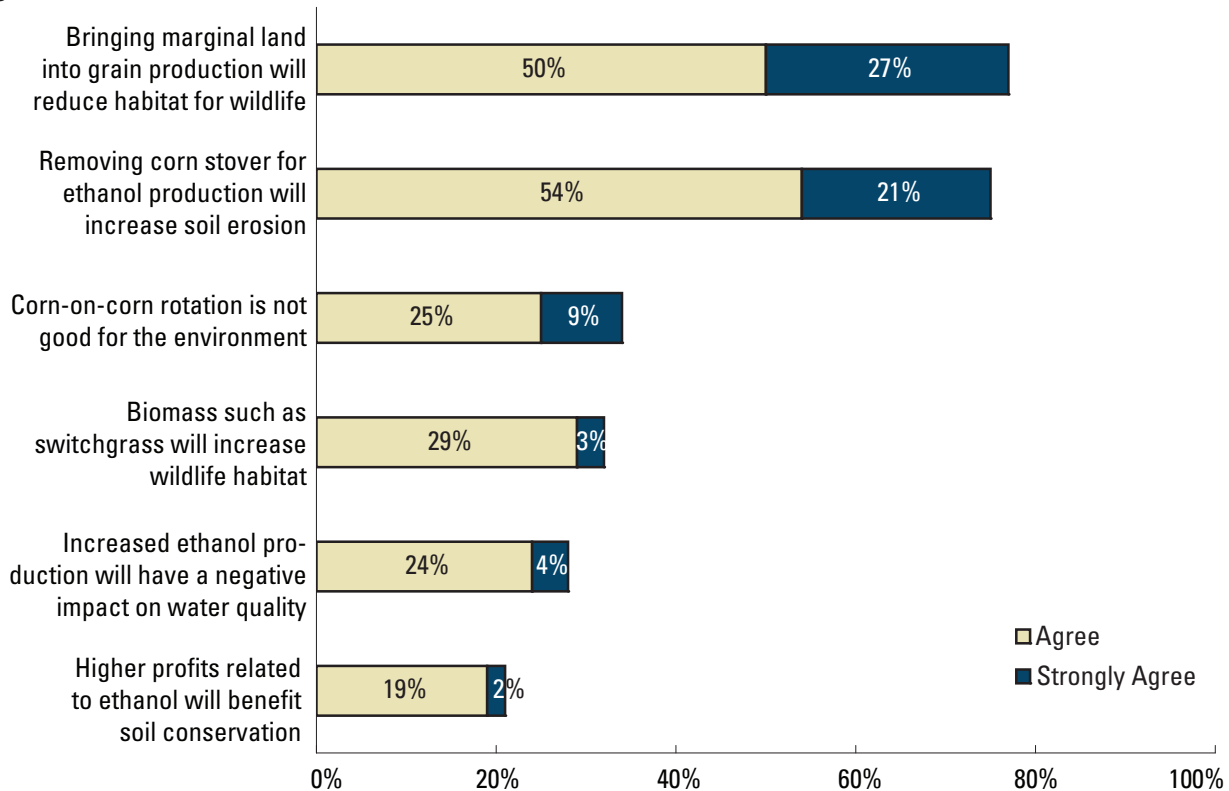
## The Environment

Long-term ecological consequences of ethanol development were on the minds of many during the *Local Conversations*. Concerns focused on the impact of corn stover harvest on soil erosion and quality, loss of Conservation Reserve Program (CRP) lands, and declines in wildlife habitat and wetlands. Water quality and quantity were also significant issues, with participants wondering whether Iowa has sufficient water resources to maintain a new industry while also sustaining agriculture and natural resources.

The Farm Poll survey found both concern and uncertainty about environmental issues among farmers. Reactions to the prospective removal of corn stover for ethanol production were negative on the whole, with 75 percent of farmers in agreement that doing so would increase soil erosion (Figure 2). Likewise, 77 percent of farmers agreed that bringing marginal land into grain production—a distinct possibility if ethanol-induced price increases are maintained—would reduce wildlife habitat.

Several environment-related questions elicited more ambiguous reactions. When asked whether growth in ethanol production would negatively impact water quality, only 28 percent agreed, while the rest were uncertain (41 percent) or disagreed (31 percent). Opinions on the impacts of continuous cultivation of corn (as opposed to rotation with soybeans or other crops) were also mixed: 34 percent agreed that the practice has negative environmental implications, while 41 percent disagreed.

**Figure 2. Environment**



A question regarding the potential positive impacts of growing cellulosic ethanol feedstocks such as switchgrass on wildlife habitat generated a similar proportion of uncertainty: 44 percent of farmers were uncertain compared to 32 percent agreement and 24 percent disagreement. When asked whether higher profits from ethanol-related grain price increases would translate into investments in soil conservation, a clear majority of farmers either disagreed (42 percent) or responded with uncertainty (37 percent).

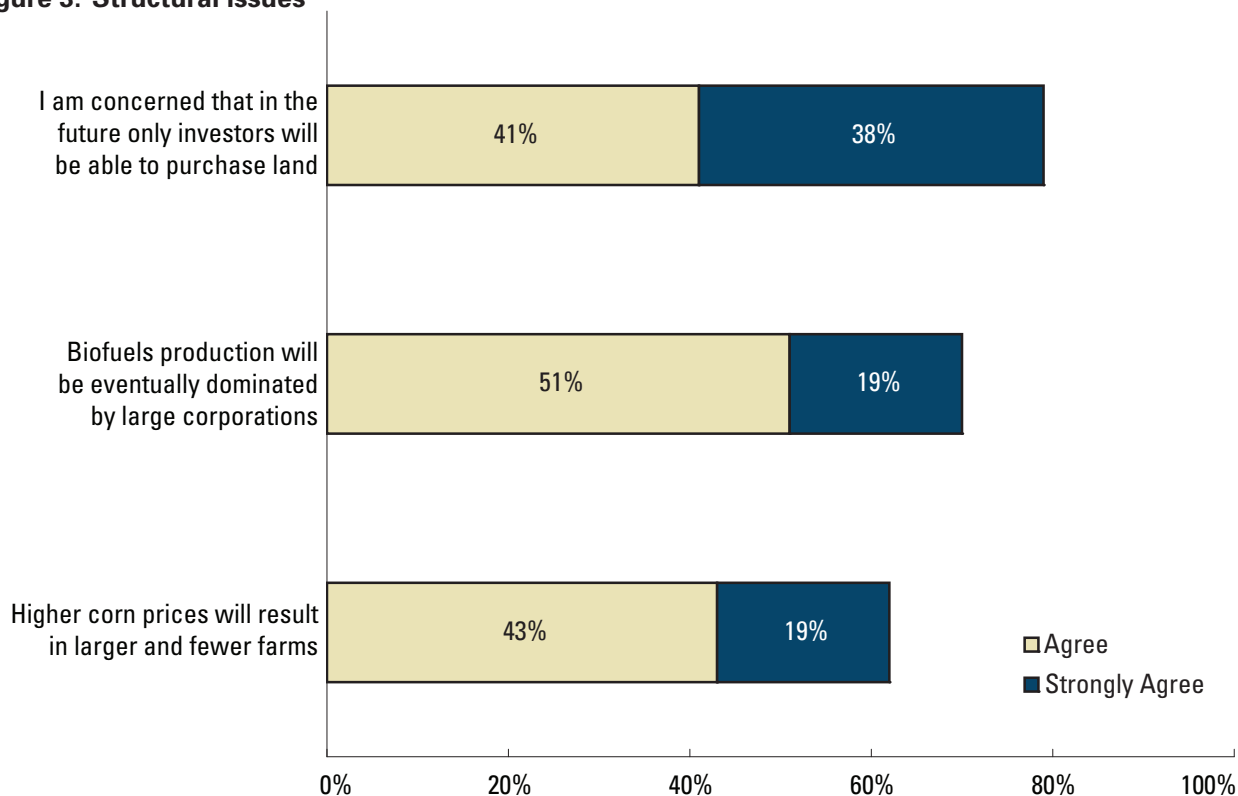
The fate of environmentally sensitive CRP lands is a point of contention in debates over ethanol's potential environmental impacts. Many participants in the *Local Conversations* felt that the conservation and wildlife benefits that the CRP provides would be lost if those lands were brought back into crop production. On the other hand, some believe that at least a portion of CRP lands should be brought back into production so that farmers can take advantage of higher grain prices.

Farm Poll results indicate that a relatively small percentage of farmers—nine percent—would probably or definitely convert lands now in CRP to crop production over the next five years. Those farmers who planned to shift from CRP to crop production over the next two years indicated that they would convert an average of 42 acres. While these figures might seem negligible, if they are extrapolated to the entire population of Iowa farmers, such a shift would result in a reconversion of approximately 335,000 acres of CRP land—over 15 percent of Iowa's current CRP acreage.

### ***Structure of Agriculture, the Ethanol Industry***

The trends toward larger and fewer farms, consolidation among input firms and buyers of farm outputs, and distribution of the economic benefits of farming and value-added activities have long been concerns among rural residents, and these apprehensions apply to the recent growth of the ethanol industry. The distribution of benefits was a recurring theme

**Figure 3. Structural issues**



in the *Local Conversations* as people asked, “where will the money go?,” and discussed how out-of-state or foreign investment in ethanol plants and land might effect local participation in production (especially among beginning farmers) and profits.

The Farm Poll findings suggest that farmers are thinking along similar lines. Seventy-five percent of those surveyed indicated that they are concerned about out-of-state ownership of Iowa land and 79 percent agreed that in the future only investors will be able to afford land (Figure 3). Sixty-two percent believed that higher corn prices will lead to consolidation in farming, with farms becoming fewer and larger. Iowa farmers also predict consolidation in the biofuels industry: 70 percent concurred that biofuels production will eventually be dominated by large agribusiness corporations.

### ***Alternative Energy and Conservation***

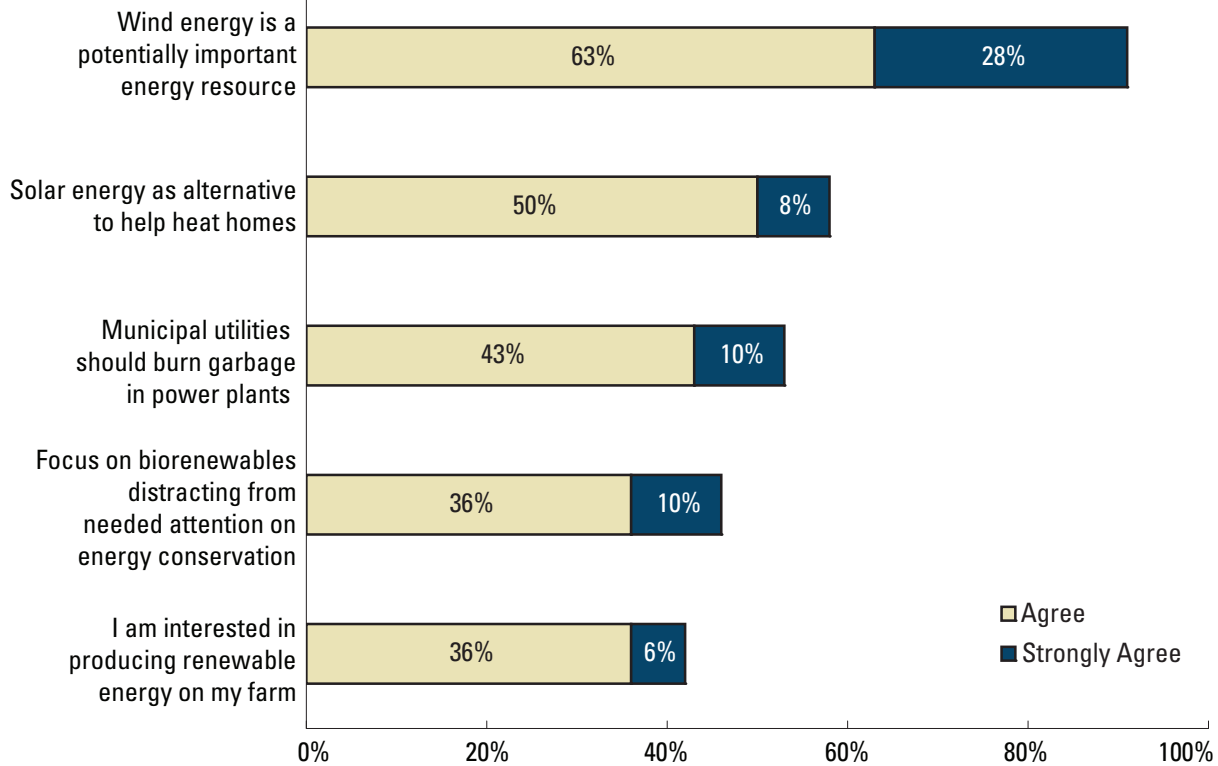
Participants in the *Local Conversations* also called for broader thinking on renewable energy. Ethanol was clearly seen as important,

but it was suggested that more effort be applied to a wider research and development agenda that incorporates wind, hydroelectric, biodiesel, and other alternative forms of energy generation within an overall energy conservation program.

Responses to a number of Farm Poll questions indicate that Iowa farmers share some of those sentiments. Wind power garnered extensive support, with 91 percent of farmers in agreement that it is a potentially important energy resource for Iowa (Figure 4). Nearly 60 percent of farmers viewed solar power as a viable home-heating alternative, and just over half agreed that municipal waste should be burned to produce electricity.

The prospect of on-farm renewable energy production drew both interest and uncertainty. Although 42 percent of farmers showed interest in producing energy on their farms, an equal number were uncertain about that possibility. The degree of uncertainty is likely associated with lack of knowledge on the

**Figure 4. Alternative energy**



subject: 82 percent of farmers agreed that more information on production of renewable energy should be available.

In addition to support for alternative, renewable sources of energy, farmers also appear to back a greater commitment to energy conservation. Like their counterparts who participated in the *Local Conversations*, many farmers—46 percent—concurred that the focus on biorenewable energy is distracting from needed attention on conservation.

## Policy and Extension Implications

Overall, findings from the 2007 Iowa Farm and Rural Life Poll were in line with opinions expressed at the *Local Conversations* meetings. The views recorded through the two efforts were similar in many respects, and our conclusions regarding how Extension might best serve its stakeholders echo several of the recommendations contained in that report.

Both the Farm Poll and the *Local Conversations* effort reflect a high degree of uncertainty regarding some of the potential impacts of ethanol development. This lack of knowledge represents an opportunity for Extension and its partners to help clarify some of these pressing questions through research and education. There are three closely related areas where concern and uncertainty about potential impacts are most apparent: employment and economic growth, concentration in the agricultural sector, and the environment.

What about the livestock industry? In the area of economic growth and employment, the two major concerns are net employment effects and distribution of biofuels profits at the local level. Employment concerns seem to be tied mainly to the potential complementarity or competition between the ethanol and livestock industries. Will competition between these industries for grain and labor lead to overall declines in employment, or will the industries complement each other and foster general employment growth? *Local Conversations*

participants asked Extension to conduct research and education activities that would support the latter scenario, and Farm Poll data suggest that farmers would back efforts focused on cultivating complementarity between the ethanol industry and animal agriculture.

**Where will the money go?** A second economic concern relates to the question raised regarding distribution of economic benefits. Research suggests that local ownership of ethanol production facilities translates into greater local economic benefit. Many Iowa farmers believe that the production of biofuels will eventually be controlled by large corporations, and both farmers and Iowans in general are concerned about out-of-state ownership of land and ethanol plants. If local distribution of ethanol revenues does lead to better economic outcomes, should local ownership be fostered? This and similar questions beg Extension's research attention as ownership of biofuels plants becomes increasingly extra-local.

**What about the environment?** Uncertainty regarding the possible environmental outcomes of various bioeconomy development scenarios is high among Iowans. Both the *Local Conversations* and the Farm Poll highlighted that Iowans are concerned about potential negative impacts of intensified cropping and biofuels production on the quality of soil and water and wildlife habitat. These concerns translate into opportunities for ISU Extension to take a leadership role in efforts to ensure

that progress in soil, water, and habitat conservation continues rather than being undone.

**Other renewables and conservation?** Our research indicates that while Iowans generally support biofuels development, they also appear to back longer-term, broader-based, and more integrated development of renewable energy sources. In addition to ethanol, they view wind, solar, and hydroelectric energy as viable options, especially when coupled with gains in energy efficiency and conservation. *Local Conversations* participants specifically requested that ISU dedicate research efforts to basic conservation and alternative renewable energy sources. Farm Poll results imply that farmers would also encourage intensification of such research efforts.

The *Local Conversations* provided forums in which Iowans could express their hopes and fears related to the bioeconomy. The Farm Poll collected data on many of the issues that arose during the local conversations. Taken together, the information that the two efforts gathered highlight a number of challenges and opportunities on which Iowa State University Extension's strengths—research and research-based education and outreach—should be brought to bear. Iowans have spoken—the onus is now on Extension to continue working toward bioeconomy development initiatives that are aligned with its mission to foster healthy people, lands, and economies.

**For more information from the 2007 Iowa Farm and Rural Life Poll, see the following additional reports which are available at [www.extension.iastate.edu/store](http://www.extension.iastate.edu/store)**

PM 2043, *Iowa Farm and Rural Life Poll 2007 Summary Report*. This is an overview of the complete 2007 Poll and is available as a paper copy or online.

PM 2044, *Iowa Farm and Rural Life Poll 2007 Survey Report on Farmer Entrepreneurship* (available only online)

PM 2049, *Iowa Farm and Rural Life Poll 2007 Survey Report on Grain Storage and Transportation* (available only online)

Prepared by J. Gordon Arbuckle, Jr., extension sociologist; Peter Korsching, professor; Paul Lasley, extension sociologist; and Trevalyn Gruber. Renea Miller and Del Marks provided valuable layout assistance to the questionnaire and this report. The Iowa Department of Land Stewardship, Division of Statistics, assisted in the data collection.

File: Communities 9-3

## IOWA STATE UNIVERSITY

University Extension

***Helping Iowans become their best.***

***...and justice for all***

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jack M. Payne, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.