Comprehensive Report of Results

Community Conversations II: Food, Feed, and Fuel
November and December 2008

Iowa State University Extension
Bioeconomy Task Force

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EXECUTIVE SUMMARY

Community Conversations II: Feed, Fuel, and Food took place in November and December of 2008, as a follow-up to a similar process conducted in 2007. ISU Extension initiated these conversations at the county level to bring together stakeholders to discuss the challenges and opportunities of Iowa’s biofuel economy. Over 800 participants in 97 Extension districts across Iowa participated in the dialogues, including representatives from agriculture, government, finance, education, and economic development.

Community conversations focused on topics that were important to stakeholders, and explored the effects of the biofuel industry on Iowa’s communities, families, local economies, energy prices, food costs, and conservation efforts. The North Central Regional Center for Rural Development analyzed notes from the conversations to determine overall themes and issues that surfaced from the dialogues.

The conversations painted a complex, yet informative picture of Iowa agriculture, communities, families, and environment. The biofuel economy has provided Iowa with many opportunities. Stakeholders have observed the creation of new jobs, new markets for corn and soybeans, increased income for grain farmers, and an increased tax base. Unfortunately, the benefits have also come with some costs, especially as it relates to livestock farmers.

Throughout the conversations, vulnerability and risk were recurring themes. While high grain prices afford short term financial gains for grain farmers, rising land values and input costs have left many feeling uncertain about the future. The ethanol industry itself is in flux, making it difficult for plants to obtain credit, threatening recent investments in infrastructure developed in response to the biofuel economy.

High grain prices have had both beneficial and unfortunate implications for communities and the environment. Participants expressed a sense of community vulnerability, as they observe the consolidation of livestock operations and bemoan the loss of small family-owned farms. Moreover, conservation efforts appear to be on the decrease although some disagreement exists on this point. Stakeholders note an increase in “productionist” attitudes among farmers, resulting in increased corn production, increased corn-on-corn crop rotation practices, and the conversion of CRP and marginal land into production. Given increased production and the loss of buffer zones, stakeholders are also concerned about the quality of groundwater. Most gains in conservation are related to production practices on working lands and shifts in tillage practices.

Rising food costs are also a major concern for families and communities with implications on human health. Participants offered sometimes conflicting observations about the impact of higher food and energy costs on personal food choices. Some observed more home gardening and the purchase of less processed foods. Others observed a decrease in the purchase of fresh fruits and vegetables in favor of less expensive, lower quality foods. Stakeholders believe low income families are the most vulnerable to the rising cost of food, raising issues about food security.
The volatility of the markets and rising food costs have increased interest in local foods and food self-sufficiency. The demand for local foods has increased, but the current supply does not meet local needs. Policy, high grain prices, and the lack of local food market development were seen as factors that increase risk and deter a switch from grain production to fruit and vegetable production.

While the conversations describe the situation today, participants also looked ahead toward the future of agriculture and energy. They expressed a need to reach out beyond the agricultural community and educate consumers about the real costs of energy to dispel myths about the influence of ethanol on food costs. They see Extension as a leader and partner in this regard, uniquely poised to help the state explore diversification to mitigate market volatility and community vulnerability.
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I. INTRODUCTION

In November, 2008, Iowa State University Extension convened and facilitated the second in a series of community conversations on the bioeconomy in 97 Extension districts across the state. Titled Community Conversation II: Feed, Food, and Fuel, the primary purpose of these sessions was to engage interested individual stakeholders in a dialogue about the economic, social, and environmental opportunities and challenges associated with the development of Iowa's biorenewable resources. In addition, these sessions were designed to inform participants about the state's role in meeting national demand for feed, food, and fuel and to gauge impacts of the bioeconomy on Iowa's citizens and landscapes. Targeted participants were 15-20 people in each Extension district, comprised of grain and livestock producers, local biofuel plant investors, elected officials, human service providers, lenders, church leaders, chamber of commerce staff, soil and water conservationists, community business leaders, non-profit leaders, and educators. Stakeholder participants received a personal invitation via e-mail, by phone, or by letter to attend and make their voices heard.

Facilitating Extension directors and field staff asked participants in each community conversation to jointly address three topics from a list of six to address (if they had time for all three). They could choose any three from the six topics provided, including:

- Food and Fuel: Enough Grain but Not Enough Processing
- Iowa’s Position in Global Agriculture and Bioenergy
- Factors that Determine the Cost of Food
- Rising Energy and Food Prices: Effects on Families
- Renewable Energy’s Place in the High Energy Cost Picture
- From Vulnerability to Resiliency: Iowa Agriculture in the Age of Biorenewables

The bioeconomy conversations were prefaced by a short webcast prepared for each topic. The webcast ran from 12-23 minutes, and featured a short lecture and Powerpoint presented by an ISU faculty member with expertise in the relevant topic. The intention of the videos was to inform the community participants of relevant information so that they could carry on an informed conversation related to their chosen topics. For each topic, the group viewed the archived webcast prior to answering a set of 3-4 predetermined questions associated with each topic. These questions (Appendix 1) were developed by members of the ISU Bioeconomy Task Force, a group of nearly 20 Extension faculty responsible for project oversight.

II. METHODOLOGY

The North Central Regional Center for Rural Development was contracted by the Task Force to develop the online submission tools and note taking guidelines. The NCRCRD team was comprised of an Assistant Scientist and two graduate students.
Data Collection and Submission

Facilitators were asked to designate a note taker from Extension to record stakeholder responses to the questions. Notes of the responses were submitted to a central, online database using Survey Monkey. Survey Monkey is typically a low cost way to administer electronic surveys to individuals. In the case of the community conversations, Survey Monkey proved to be the easiest and most expedient way to coordinate data collection from Extension facilitators and note takers across the state. In preparation for this, note takers were provided with note taking tips and guidelines to ensure they captured key elements of interest in the conversations, and to ensure some level of uniformity in the way each conversation was recorded in the districts. Extension staff were also asked to collect gender, age, and occupational information from stakeholders, which they submitted to another central online database using Survey Monkey. This information was critical for summarizing basic demographic characteristics of attendees.

Data Management and Coding

Once the survey submission process was closed the last day of December, the NCRCRD converted the demographic data into an SPSS (15.0) file and cleaned it. We imported the qualitative data (stakeholder responses to the questions) into NVIVO 8 in preparation for the coding process.

A total of 14 districts (seven pairs) conducted community conversations in partnership with one other district. These districts submitted their responses together as one case. In these instances, qualitative data were coded according to procedure, and in the final summary counts, were weighted appropriately by receiving two counts. This did not affect the demographic data analysis (where each person was only counted once).

The process of coding qualitative data is often a complex and lengthy process. This project was no exception. One graduate student coded all of the data to ensure consistency across coding decisions, subject to continuous input and review from the other two project members. We applied a systematic process to ensure that the same decision making framework was applied to all responding districts. As such, we used the questions as the framework for coding the qualitative data. An alternative coding approach we considered applying was to code each theme (e.g., conservation practices increased, low income families are hardest hit, farmer's markets increased, etc.), regardless of the question the response or reference addressed. We ultimately chose the former approach based on the assumption that an analysis of the direct responses to each question would be most valuable to Extension, the primary audience for this report. As a result, each theme within each question's relevant response was coded separately. In most cases, responses corresponded with the question. However, in other cases, responses did not correspond directly to the question but rather another question. In other cases, the response addressed several questions within the same topic at one time. The data in these instances were either moved to the appropriate question or coded twice. If the noted response was relevant to more than one question, it was coded twice within different questions to ensure we included the range of relevant responses to be included in the textual analysis. While this is technically double coding
(an accepted and encouraged practice within qualitative methods depending on the analytical goals), this has no bearing whatsoever on the summary figures generated from this process since those figures represent only the percentage of districts mentioning a particular theme, rather than the percentage of total references relating to that theme (which would be mildly skewed because of the double counts). Thus, if a district mentioned the same theme twice, it only received one "district count" in all of the charts throughout this document.

Communicating Results

Once all of the different themes within each question were coded, the three project members convened to discuss and collapse the resulting 250 themes into fewer themes (102) that would adequately capture the range of responses relating to each question while ensuring no concepts were omitted. The condensing process is helpful for reducing highly variable, complex data into fewer concepts that are more easily grasped by a variety of audiences, some of whom may be more interested in numbers rather than detailed stories.

By including both numbers and stories in this report, our goal is to appeal to a wide variety of audiences and provide a more accurate and thorough analysis of the data. These broad, collapsed categories are the basis for the bar data readers will find in the charts. The supporting text, which includes direct quotes from stakeholders in the districts as recorded by note takers, provides a level of detail that some readers will find fascinating while others may find it tedious. Regardless, all of it together is designed to provide the most comprehensive picture stakeholders described about the opportunities, challenges, and impacts associated with the bioeconomy in Iowa.

III. SAMPLE CHARACTERISTICS

Data gathered and analyzed in this report are based on purposive sampling methods of key informants selected by virtue of the positions they occupy in their communities and occupations, and the resulting unique perspectives they bring to the issues at hand. These results are not generalizable to the population of Iowa and as such, should not be construed as representing their opinions since all citizens did not have a chance to participate. However, the data do provide a reasonable snapshot of the impressions key stakeholders have who are relatively close to the industry (with time to spare and a willingness to publicly share their thoughts) about the effect of the bioeconomy on Iowa.
Table 1. Demographic Characteristics of Participating Stakeholders

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percent of stakeholders (unless specified otherwise)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender (n=752)</strong></td>
<td></td>
</tr>
<tr>
<td>Percent male</td>
<td>75%</td>
</tr>
<tr>
<td>Percent female</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Age (n=726)</strong></td>
<td></td>
</tr>
<tr>
<td>Average age, in years</td>
<td>52</td>
</tr>
<tr>
<td>Median age, in years</td>
<td>53</td>
</tr>
<tr>
<td>Age range, in years</td>
<td>17-84</td>
</tr>
<tr>
<td><strong>Occupation or employment sector (n=763)</strong></td>
<td></td>
</tr>
<tr>
<td>Farmer</td>
<td>30%</td>
</tr>
<tr>
<td>Other agriculture- and food-related enterprise (crop consultants, co-op employees, Farm Bureau, marketing, grocers, restaurant owners)</td>
<td>14%</td>
</tr>
<tr>
<td>Private sector, non food and agriculture</td>
<td>13%</td>
</tr>
<tr>
<td>Banking/lending</td>
<td>12%</td>
</tr>
<tr>
<td>Government employee (NRCS, FSA)</td>
<td>11%</td>
</tr>
<tr>
<td>Education (secondary and post secondary)</td>
<td>9%</td>
</tr>
<tr>
<td>Economic development (including Chambers of Commerce)</td>
<td>8%</td>
</tr>
<tr>
<td>Elected officials</td>
<td>6%</td>
</tr>
<tr>
<td>Cooperative Extension</td>
<td>6%</td>
</tr>
<tr>
<td>Retired, unspecified</td>
<td>4%</td>
</tr>
<tr>
<td>Media</td>
<td>3%</td>
</tr>
<tr>
<td>Church</td>
<td>2%</td>
</tr>
<tr>
<td>Health care</td>
<td>2%</td>
</tr>
<tr>
<td>Homemaker</td>
<td>1%</td>
</tr>
<tr>
<td>Self employed, unspecified</td>
<td>1%</td>
</tr>
<tr>
<td>Non profit</td>
<td>.1%</td>
</tr>
</tbody>
</table>

Of the 823 people who participated in the community conversations, basic demographic data was collected from 768 of them (93% of participants) in 90 of the 97 reporting Extension districts. However, of the records we did receive, some data were missing (refer to gender, age, and occupation categories in Table 1 for an exact count). Seven of the reporting Extension districts did not collect and/or submit demographic data.

Table 1 shows the demographic characteristics of those for whom we have data. Note that stakeholders could name up to two occupations, so those figures will not total 100 percent within the 17 classifications developed from their responses. Table 1 shows that three in four participating stakeholders are male. The average age is 52. The agricultural sector was well represented by farmers (30%) and agricultural support industries (14%). The non agriculture-related private sector was also reasonably well represented (13%), as were bankers/lenders (12%) and government representatives, including civil servants (11%) and elected officials (6%). Nearly one in ten attending the community conversations were educators (9%) or economic development professionals (8%). The conversations generally included the target populations with the exception of non profits and human service providers, which were un- or under-represented. It is unknown how many stakeholders were local biofuel plant investors. And although information on race and ethnicity was not collected, we expect that the vast majority are of Anglo descent.
IV. RESULTS AND DISCUSSION

We received data from 97 of the 100 Extension districts in the state. These Community Conversations were attended by a total of 823 stakeholders. The number of topics each district addressed varied based on the amount of time they had to choose from a list of six (see Table 2). The number of topics districts covered ranged from one to six; the average number of topics addressed was 2.7. Districts of the Central Extension region averaged more topics (2.9) while the remaining regions averaged 2.6 and 2.7. Table 2 shows the rankings and percent of responding districts addressing each topic.

Table 2. Topic Rankings

<table>
<thead>
<tr>
<th>Topic</th>
<th>Rank</th>
<th>Percent of districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic 3. Factors that Determine the Cost of Food</td>
<td>1</td>
<td>69</td>
</tr>
<tr>
<td>Topic 2. Iowa’s Position in Global Agriculture and Bioenergy</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Topic 5. Renewable Energy’s Place in the High Energy Cost Picture</td>
<td>3</td>
<td>46</td>
</tr>
<tr>
<td>Topic 4. Rising Energy and Food Prices: Effects on Families</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>Topic 1. Food and Fuel: Enough Grain but Not Enough Processing</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>Topic 6. From Vulnerability to Resiliency: Iowa Agriculture in the Age of Biorenewables</td>
<td>6</td>
<td>35</td>
</tr>
</tbody>
</table>

The most popular topic was Topic 3, which addressed issues related to food expenditures, support for local foods, and the effect of higher energy and commodity prices on food choices. The least chosen topic (Topic 6) posed questions related to agriculture’s impact on the environment and conservation efforts. Figure 1 shows topics selected by Extension region.

From these data, we can see that the food cost topic resonated the most with districts in the Northeast and Northwest Extension regions. Central Extension districts were more interested in addressing Topic 2, which covered cropping pattern and conservation changes in the past two years, and how higher feed costs are affecting the livestock industry. While the Southwestern districts were evenly distributed in the topics they covered, districts in the Southeast region were most concerned with addressing the effect of rising energy and food prices on families.
Figure 1. Topic Selections, by Extension Region

Figure 1. Topic Selections, by Extension Region

Topic 1. Food and Fuel: Enough Grain but Not Enough Processing

Questions in Topic 1 addressed more general concerns related to the bioeconomy. Specifically, they touched on issues related to

- Changes it has brought communities;
- Challenges facing the biofuels industry in Iowa; and
- What needs to happen so Iowa can maintain a leadership role in agricultural industries beyond biofuels.

Community Changes Resulting from the Bioeconomy

The emergence of the bioeconomy has brought varying changes to Iowa’s economy, landscape, and people. Some aspects of change have been well received, but the data show that unwelcomed changes in the economy have curbed some of the enthusiasm for biofuels. The major community change themes (both positive and negative) stakeholders connected to the rise of the bioeconomy are increased financial risk and volatility, changes in regional economies, and expanded markets for corn and soy (Figure 2). Other themes discussed include increased use and demand for new and existing infrastructure, and shifts in public attitudes and awareness.
Increased financial risk and volatility. An increase in financial risk and volatility was reported by 86% of districts responding to Topic 1. Notes from one district characterized the situation in this way:

[The bioeconomy] has increased grain prices (for a time), but has also increased the risk and volatility. Increased land prices and input prices have increased dramatically, coupled with the weather this [2008] season and late planting. The commodity rollercoaster has created an extremely risky situation for many producers…

Land prices and rent were noted as large contributors to increased cost of production and increased financial risk of grain producers. In some districts, the recent bankruptcy of Vera Sun was the centerpiece of the instability and risk discussion. One district reported that “the local [ethanol] plant will have trouble building the trust of the community again.” Other districts are concerned that the instability of ethanol companies will have negative impacts on their local economy. According to one district “the concern with bankruptcy is beginning to show its ugly head on two fronts: loss of value of stock in the company as well as loss of revenue due to firms not honoring grain contracts.”

Another major element identified in the discussions on instability and risk is the state of financial hardship of Iowa’s livestock industry, especially hog producers. The increased prices of grain which are a boon to grain producers are reported as catastrophic for livestock producers. There is a “concern that bio-fuels are driving the livestock man out of business.”

The above changes in the economy are reported along with positive changes, most notably increased income for grain farmers. The increased value of grain crops is appreciated for its
contribution to farm family incomes and local economies. That said, stakeholders tempered their optimism by expressing worry about the volatility of grain prices and future prices. As one participant said “We could afford to buy machinery this year but [that] might not be so easy in coming years.”

Changes in regional economy. Nearly three in four districts addressing Topic 1 reported changes in the regional economy. The majority of these changes are an increase in the number of jobs, rejuvenated regional economies, and restructuring of grain markets. Most comments pertaining to the creation of new jobs did not specify job type, but biofuel laboratory positions were noted by some districts. Increased family incomes, increased tax bases, and industry spending within regional economies were noted as having a positive impact on local economies. As one respondent put it, such regional spending “keeps the cash at home.” Another respondent commented that “trucking companies have added equipment and drivers to deliver co-products.” Several comments about increased purchases of farm equipment arose as evidence of an economic multiplier effect stakeholders associated with the bioeconomy. Conversely, some respondents expressed uncertainty that regional economic multiplier effects were being realized. “How many of the newly generated dollars actually stay here and benefit Iowa?”

A minority of districts noted that the bioeconomy has changed the structure of the grain market insofar as where farmers sell their corn is different than in the past. Instead of selling through a cooperative, farmers are selling directly to ethanol plants. One district reported the bioeconomy has made grain cooperatives obsolete and the coop of that county has recently closed. Another district made vague mention of the changed marketing practices of grain producers.

Providing new markets for corn and soy. The emergence of new buyers of corn and soy, and strengthened markets for Iowa’s crops were reported by 33% of districts responding to Topic 1. The content within this theme was relatively homogeneous and is captured well in this statement: “Ethanol has provided another market opportunity; previously the river terminal was the only option.” Implications include a strengthened demand for biofuel feedstock crops and the potential for concurrent higher prices, and an increase in the number of local buyers. Respondents’ comments regarding the increased number of local buyers were positive in nature. As one district reported “The new Tate and Lyle plant near Fort Dodge brings more flexibility to the region.”

Increased use and demand for new and existing infrastructure. Of the districts responding to Topic 1, one in five (19%) reported an increased use and demand for new and existing infrastructure. The installment of new water lines was the only specific mention of new infrastructure, but the mention of “new facilities” can be taken to include many biofuel-related infrastructure needs/projects. The increased pressure on existing infrastructure was well articulated. One district reported, “More trains are seen going through town.” Another district reported an increase in truck traffic. Increased demand for existing roads and rail is a concern to some districts, especially one, which mentioned the deterioration of highways.

Shifts in attitudes and awareness. Fourteen percent of districts noted shifts in public attitudes and awareness. Most of these reported a surge in production-related attitudes. One respondent was quoted as saying “It has brought back the mindset of production is number one.
Productivity, fence row to fence row [planting], is the mentality.” Another district said, “Everyone needs to raise more crops to fill all the needs for corn.”

Challenges Facing Iowa’s Bioeconomy

Challenges facing Iowa’s biofuel industry concern the economic, natural, and social realms. The themes emerging from the question on challenges articulated a need to maintain ethanol plant efficiency and profitability, mediate the uncertainty and volatility of market, abate negative public perception of ethanol, take into consideration natural resource limitations, compensate for the lack of or inadequate infrastructure, and maintain government support for ethanol.

Figure 3. Challenges Facing the Biofuels Industry in Iowa

Maintaining ethanol plant profitability. Eighty one percent of Topic 1 districts reported ethanol plant profitability as a major challenge to the biofuels industry. This was the most reported challenge, and the essence of the issue is captured in one district’s notes: “Producing the biofuels at competitive costs so there will be profit and a savings to consumers is needed to remain in business.” These districts identified contributing factors related to profitability including efficiency of ethanol plant production, financing and credit, and plant ownership.

The efficiency of ethanol plants constituted the bulk of the profitability discussion. Stakeholders see this as key to the industry’s economic viability locally, nationally, and internationally. In short, the district comments articulate the idea that biofuels must be produced as efficiently as possible and at the lowest cost possible so they can be price-competitive and economically viable. Efficiency was discussed in various ways. First, the implementation of new and more efficient technologies like “second generation” or cellulosic biofuel processing is viewed as the logical next step for the industry, but respondents wonder how realistic implementation of these
new technologies really is. Will they be more profitable than corn-based ethanol? How soon can the new technologies be economically viable?

Energy use is another facet of efficiency noted by stakeholders who contemplated the cost of energy used to make ethanol compared to the value of energy produced. According to one district, “One challenge is the energy it takes to run an ethanol plant.” Another district warned, “We still expend quite a bit of energy to make energy, although we are getting more efficient [at that].” A third factor in the plant profitability equation is the cost of grain. Plant efficiency and low operating costs are reported to be powerful tools plants can use to maintain profitability in the shadow of high grain prices.

Stakeholders also reported a decrease in credit available to ethanol plants as a challenge to industry profitability. The ability of a biofuel plant to remain profitable depends on its access to capital as capital is necessary for investment in new technologies and for appropriate growth. The notes of one district are telling in this regard: “Two bankers present indicated that they are not in favor of financing more ethanol plants.” Some districts provided the case of Vera Sun’s bankruptcy as evidence that restricted credit is a major challenge to the industry. “The bankruptcy of ethanol plants and other credit problems are hurting the industry. Vera Sun is a good example of the problem.” Respondents link, at least in part, the lack of available credit to the closing of ethanol plants. Additionally, stakeholders expressed concern that their contractual agreements with ethanol plants will not be honored when plants go out of business.

The above financing and credit discussion segues into the third profitability component identified by districts: that of ownership. Plant closings beg the question posed by one district “Who is going to own the plants?” Districts expressed dissatisfaction with ownership consolidation and non-local ownership as such ownership situations are perceived to be contrary to regional economic well-being and development.

Uncertainty and volatility of market. Of districts responding to Topic 1, 61% stated that uncertainty and volatility of the grain market and contractual agreements between corn and soybean producers and ethanol plants is a major challenge facing Iowa’s bioeconomy. The uncertainty and volatility was reported as affecting families, the region, and nation. Short-term planning was identified as detracting from long-term needs including economic and food security.

Financial strain on farm families and others tied to the success of the bioeconomy is a concern to stakeholders. They also expressed concern for their communities in terms of generational losses that market volatility might bring. “Financial problems make people nervous. Prices decreased due to the ethanol plant shutdown. This is a great risk. With the increased cash rents and increased inputs we could lose another generation of farmers.”

Some districts pointed to what they see as the industry’s uncertainty and volatility as a challenge for regional biofuels development. “One participant from the county economic development group expressed how frustrating it has been in efforts over the past several years to plan and build a bio-diesel plant in this area with the market volatility in both soybeans and fuel. The feasibility has swung from one extreme to the other at least twice over.” While not as strongly
expressed as on the farm family and regional level, respondents questioned the biofuels industry by wondering whether it was interfering in more "noble" national and global work of "feeding the world." "What is the long-term vision?" asked one stakeholder. "Are we caught up in the excitement of immediate income versus the need to feed the world?"

**Negative public perception of ethanol.** Nearly half (47%) of Topic 1 districts identified negative public perceptions of biofuels as a challenge to the industry’s success. Respondents perceive a conflict between agriculture’s favor for biofuels and the general public’s disfavor. A good “alternative fuel image,” as one district put it, "is needed if the bioeconomy is to be economically viable." According to notes from another district, “People don’t realize how much higher the cost of gas would be without biofuels.” Respondents’ comments suggested that the negative public reaction to the biofuels industry is the result of misunderstanding and an inaccurate interpretation of the facts promulgated by non-agricultural interests. Stakeholders identify the food versus fuel debate as a major contributor to negative public perceptions. “Profit margins are squeezed by low level of acceptance by the general public… food always wins! There is too much bad [biofuel] PR.” Some districts thought auto manufactures could play an important role in increasing support for the industry. “We need to get the auto industry on board for using more ethanol.” One district asserted that Iowa State University and Extension is well-positioned to help align public perception of biofuel with the agricultural need for economic security. “ISU needs to take the lead and has a responsibility to respond to misconceptions about ethanol production.”

**Natural resource limitations.** Of the districts responding to Topic 1, 36% identified limited natural resources as a challenge facing Iowa’s bioeconomy. The term “sustainable” frequently appeared in the notes. Respondents questioned the capacity of Iowa’s natural capital to produce enough grain to sustain the bioeconomy. The state’s water supply was one of the main natural resources in question. As one district put it, “Do we have the water to meet the industry demands?” The second natural resource concern related to the production capacity of arable land. “The Outlook meetings of '07 said we cannot possibly produce enough corn to provide all the corn needed for ethanol production.” Another district stated, “Grain alone can never supply the full demand or mandate for renewable fuels.” This perceived natural resource limitation was further discussed in regard to the livestock industry’s needs for livestock, and how this might further compound the supply problem.

**Lack of or inadequate infrastructure.** Lack of or inadequate infrastructure was noted as a challenge for Iowa’s bioeconomy by 36% of districts addressing Topic 1. Stakeholders raised three issues we classified into the following subcategories: 1) Feedstock storage and transportation, 2) biofuel distribution infrastructure, and 3) roads and rails.

Comments regarding grain transportation and storage pertained specifically to accommodations for cellulosic materials. “Concerns of cellulosic crop handling and costs of harvesting, transporting, storing, and processing were made.” Another district asked, “Where can we store corn cobs if you start cellulosic [biofuel] plants?” These comments demonstrate that some stakeholders are apprehensive regarding changes in infrastructure needs. Infrastructure changes may require new investments of financial and human capital. Some districts noted that without appropriate biomass storage and transportation infrastructure, producers will not be able to
access emerging market opportunities in cellulosic ethanol production. One district mentioned concern for biofuel co-product storage and transportation infrastructure as well.

Regarding biofuel distribution infrastructure, “Transportation is an issue for ethanol [particularly] long distance--there is no distribution plan.” Notes on this topic were limited in detail, but revolved around the general need for effective transportation via road, rail, and pipeline in order to support the economic viability of the bioeconomy.

Road and rail infrastructure was noted as being in a state of degradation due to increased use. Once again, these notes were not detailed, and comments did not extend beyond generalizations. One district noted that rail is a less costly mode of transportation, and that its use is critical for maintaining biofuel’s profitability. Another mentioned needed improvements in water transportation infrastructure. “The lock and dam system needs to be updated.”

**Maintaining government support for ethanol.** Twenty five percent of districts responding to Topic 1 conveyed the message that maintaining government support for biofuels is a significant challenge facing the industry. Respondents differentiated between biofuel subsidization and environmental regulation. As one note-taker put it, we need the “ability to remain profitable once subsidies go away in three to five years.” Districts did not state opinions whether or not government subsidization should or should not continue (although the previous comment shows there is an expectation they will be cut). Instead, the discussions centered on how the industry should position itself for economic viability without subsidization. Environmental regulation was also noted as a challenge. The industry needs to “be able to keep up with the ever changing environmental rules and regulations.”

**Challenges to Maintaining Iowa's Agricultural Leadership**

Iowa is a national and world leader in biofuel production, but is also a leader in other areas agricultural production. In order to maintain the state’s leadership position in agricultural production, districts suggested various issues that need to be addressed. They emphasized the need to support diversification in agriculture, conduct promotional and educational campaigns, manage farm financial risk, increase the use of biofuel co-products, implement responsible agriculture, support agricultural innovation and research, and change farm policy (Figure 4).
Support agricultural diversification. Nearly half of the districts answering this question said that diversification in agriculture is needed to maintain Iowa’s leadership in agriculture. District discussions about diversification focused on two particular areas: diversification of crop production and processing, and diversification of livestock production and processing.

One stakeholder stated, “We don’t have enough diversity in crops.” Crop diversity was noted by some districts as important for farm economic viability and resilience. Other districts cited farm policy as the major barrier for realizing crop diversity in Iowa. “The national farm bill limits the production of fruits and vegetables on program land.” In spite of prohibitive farm policy, some districts believe Iowa’s potential for crop diversity is strong. “We can produce 100% of our food (except for bananas), with Iowa’s soils, fuels, etc. We should even be able to produce a surplus to export.” As one stakeholder pointed out, “When it becomes profitable and acceptable, farmers will grow more food for local markets. Farmers tend to operate in their comfort level. Growing food for local consumption may be out of their comfort level.” Diversification of food processing was presented as a necessary component of crop diversity. “Our economic development organizations should continue to support the growth of processing facilities for locally produced foods.” According to another district “… reviving more canning facilities in Iowa needs to be considered.”

Diversification of livestock production and meat processing was also integral to the diversity discussion. “We need a healthy balance between the livestock and crop industry, but how do we...
achieve this?” asked one district. The close relationship between livestock and crop production was mentioned as an key component in a diversified agricultural system and economy.

In terms of processing, one district discussed meat lockers as a possible avenue for economic development but asserted that it requires a shift in the way consumers think, “Locker beef and deer is not a good way to save money. Local meat is good for the producer, but customers might get cuts they don’t like.”

Conducting promotional and educational campaigns. One in three districts responding to Topic 1 posited that promotional and educational campaigns are needed to help Iowa remain an agricultural leader. Stakeholders specified three topic areas these campaigns should address: Livestock and dairy industries, the food dollar, and local and regional production.

Some districts argued that the public’s negative reaction to Iowa’s livestock and dairy industries is a substantial barrier to producer and regional economic well-being. According to one district, “The value of the livestock industry to local communities needs to be highlighted and promoted. The dairy industry creates by far more jobs than the ethanol industry and has a much greater impact on the local community.” Some districts reported that efforts of animal rights groups such as PETA (People for the Ethical Treatment of Animals) are detrimental to Iowa’s livestock industry, and that the livestock industry promotional campaigns should respond accordingly. Respondents said that promotional and marketing campaigns extolling the benefits of Iowa’s livestock and dairy is necessary to sustain the industry.

Public education regarding the food versus fuel debate is important to stakeholders. They believe that public misconceptions about the “true cost affecting the price of food” exist, and that these misconceptions present serious barriers to Iowa’s agricultural leadership. Notes from the districts suggest that stakeholders feel Iowa agriculture receives more than its fair share of the blame for the rising cost of food, and that promotional and educational campaigns could help alleviate this problem.

Marketing of food produced in the state was noted as one promising strategy for maintaining Iowa's agricultural leadership. Respondents linked local marketing to the development of regional food processing and distribution, and the long-term viability of Iowa agriculture. “Currently we don’t have the infrastructure to process our own foods…” One district reported, “If people pay for it, farmers can do it.” These notes suggest at least some stakeholders believe farmers are receptive to local models of food production, processing, and distribution, but without the presence of a market for such products, these alternatives are not economically viable. For this reason, investments must be made in developing markets for these products. “When it becomes profitable… farmers will grow more food locally. Respondents believe local marketing is one tool in making local food production profitable.”

Managing farm financial risk. Managing farm financial risk was noted by 28% of districts responding to Topic 1 as a challenge to maintaining Iowa’s role as an agricultural leader. “There is a general concern about the future with rising input costs and decreasing commodity prices.” The instability in the agricultural economy results in increased farm risk. The notes represent a “plea for equilibrium” and state a “need for stability.” Economic instability was linked to farm consolidation and “farmsteads bulldozed.” Stakeholders generally hope that the current
instability is a cycle which will pass in time, but are nonetheless concerned about how Iowa farms will fare once the downturn passes. District notes suggest that stakeholders believe larger farms may weather risk better than smaller farms, and further undesirable consolidation will result.

Many conversations addressing this question revolved around the financial hardship and risk currently experienced by the livestock industry. The notes indicate a concern that the bioeconomy may eventually outcompete the livestock industry. Managing the increased financial risks associated with increased feed costs, the inconsistent quality of biofuel co-product as feed, and increased vertical ownership were noted as major themes. However, stakeholders did identify possible ways out of this crisis as discussed below.

*Increased use of biofuel and agricultural co-products.* One in four districts responding to this topic suggested that effective use of biofuel and agricultural co-products show some promise in maintaining Iowa’s leadership in other agricultural industries, especially livestock production.

The link between biofuel co-products and livestock feed dominated this discussion, and revolved around the need to increase the use of biofuel co-products as a means to subvert the conflict between biofuel and livestock grain needs. “Can we figure out a way to feed animals without so much corn?” One district stated, “We need to develop processing and distribution to supply byproduct food ingredients for all classes of livestock efficiently and effectively.” Other districts noted the need for further research to facilitate the use of biofuel co-products in the livestock industry. “We need to research the use of co-products as livestock feed.” In general, the notes suggested a need for finding a balance between biofuel and livestock needs, and co-product use that benefits both the biofuel and livestock industries is key for achieving this. According to one district, “[We need to] find a balance between the biofuels industry, the cropping systems, and the livestock industry.”

A secondary theme in these discussions was the utilization of other biofuel co-products such as methane and corn stover. “Methane plants need to get going. I wonder if it’s ever going to.” “We need to be innovative in Iowa to capture waste and turn it into fuel.” These discussions have undertones of the need for efficiency and profitability. Districts relate the use of co-products to issues of agricultural diversification and achieving a state of symbiosis among different agricultural enterprises.

*Engage in 'responsible' agriculture.* Of the total districts responding to Topic 1, 19% asserted that responsible and ethical agricultural practices are important for maintaining Iowa’s agricultural leadership. This discussion mainly dealt with livestock. Given the increasing environmental regulation of agricultural production, and non-governmental organization and public pressure for 'ethical' agriculture, it is becoming increasingly difficult for agriculture to meet the high standards and expectations while maintaining profitability. The following perception articulated in one district makes this point well. “TV personalities and welfare organizations are impacting our livestock industry. Regulation in some states regarding environment for livestock production will limit or lower production.” Another district stated, “More regulations make it harder to do hog production.” Adopting responsible and ethical agricultural practices are seen as a vehicle for navigating a rocky road of regulations and public
expectations, and thus, a way to remain profitable. As one district noted, “We need leadership from community groups and ISU to join together and be proactive regarding livestock production to beat regulators to the punch on policy and technology.”

Support for agricultural research and innovation. Seventeen percent of districts responding to Topic 1 indicated their belief that agricultural research will help Iowa maintain its position in the nation and world as an agricultural leader. A high degree of specificity as to what type of research is needed was not expressed in the notes. However, districts did indicate a need for increased research and investment in new “technology” and “innovation.” According to one district, “Agriculture is what we are best at and we need to invest in research.” One district made mention of farmer participation in research. “[We must] find ways to use growers to help develop products.” These notes suggest that some stakeholders see technology and innovation as important components of the state’s agricultural success in agriculture, and farmer participation in that research is key.

Farm policy changes. Fourteen percent of districts responding to Topic 1 indicated that changes in farm policy are needed if Iowa is to maintain its position as an agricultural leader. District notes on this section were brief and discursive, yet indicated the need for future agricultural policy to more accurately reflect the economic needs of farmers than current policy does. “Legislators need to be on the same page as farmers and others.” The following seems to reinforce this theme. “Political strength of character amongst politicians [is] needed to support all agriculture ventures.” One district argued to “end government subsidy in agricultural markets and let a free market exist,” while another district called for keeping “safety nets in place.” While some of these perspectives may be contradictory, the common thread is that policy must work to support Iowa’s agricultural economy and the livelihoods depending on it.

Topic 2. Iowa's Position in Global Agriculture and Bioenergy

Topic 2 asked stakeholders to consider how:

- Cropping patterns have changed in their area over the past two years;
- Conservation efforts have changed in their area over the past two years; and how
- Higher feed costs are affecting the livestock industry in their area.

Changes in Cropping Patterns

Stakeholders were given an opportunity in the community conversations to articulate cropping pattern changes they have observed in Iowa over the past two years (Figure 5). They connected such changes to two primary drivers: Changes in the economy and incidents of weather. Most commonly noted cropping pattern changes reported by districts include an increase in corn production, an increase in corn-on-corn rotations, conversion of forage crops and pasture to row crop production, cropping pattern change due to floods and weather, and an increase in soybeans.
Less commonly mentioned changes were decreases in corn production, those categorize as "other", and an increase in GMO crops.

*Figure 5. Observed Changes in Cropping Patterns over the Past Two Years*

<table>
<thead>
<tr>
<th>Change Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More acres in corn</td>
<td>68%</td>
</tr>
<tr>
<td>More corn on corn</td>
<td>43%</td>
</tr>
<tr>
<td>Forage crops and pasture converted to row crops</td>
<td>36%</td>
</tr>
<tr>
<td>No or little change</td>
<td>15%</td>
</tr>
<tr>
<td>Cropping pattern changes due to floods and weather</td>
<td>15%</td>
</tr>
<tr>
<td>More acres in soybeans</td>
<td>13%</td>
</tr>
<tr>
<td>Corn decrease</td>
<td>9%</td>
</tr>
<tr>
<td>Other</td>
<td>6%</td>
</tr>
<tr>
<td>Increase use of GMO crops</td>
<td>4%</td>
</tr>
</tbody>
</table>

*More acres in corn.* While a majority of districts (68%) reported an increase in corn planting over the past two years, the notes regarding this observation were brief. Most districts simply reported “More corn being planted.” Some districts mentioned the ethanol industry as the driving force behind the increase in corn planting. “More sales to ethanol plants,” read notes from one district. A few districts reported an increase in acres being cropped as a parallel feature of increased corn production, which may relate to the decrease of land in CRP as some reported.

*More corn on corn.* Of districts responding to Topic 2, 43% reported an increase in corn on corn. This is not surprising considering the increase in acres reported above and the record corn prices of the past few years. As one respondent said, “There is more corn following corn as corn prices increased.” This was corroborated by one farming stakeholder who said,

*I personally grow corn-on-corn now and have done it for three years in a row. I am using more fuel, more fertilizer, and increased tillage, but I do get a decent yield and it has been profitable for me for these last few years.*
Corn-on-corn crop rotations have negative implications according to some. One district mentioned that corn on corn is more costly to the farmer, and as the cost of farm inputs increase, especially the cost of fuel, it is likely that corn on corn will be less profitable and something to avoid. “Although cropping has changed, I think the rising cost of inputs will slow that down and farmers will go back to the standards when they know they aren’t making a fast buck.”

*Conversion of forage crops and pasture into row crops.* Based on observations discussed in the community conversations, the increased demand for and price of corn has resulted in forage crops and pasture land being converted to row crops, especially corn. Of the total number of districts responding to Topic 2, 36% report a shift from forage or pasture to row crops. As one district’s note taker put it, “there has been a loss of forage crops and pasture due to conversion to row crops.”

*Cropping pattern changes due to floods and weather.* Fifteen percent of Topic 2 districts say the high amount of rainfall Iowa received over the past year has had an impact on cropping patterns. The district notes did not offer much in the way of precisely how flooding and rainfall has changed cropping patterns except to convey that flooded corn plantings were replaced by soybeans: “Flooded a lot of corn this year – replaced with beans.”

*More acres in soybeans.* “Next year, I expect more beans than corn if fertilizer prices don’t change” stated one stakeholder. Thirteen percent of districts responding to Topic 2 report an increase in soybean production. While there has been a noted increase in corn acreage over the past several years, the high cost of corn production, coupled with increasing input costs and decreased corn prices, is leading to predictions of less corn and more soy. The following statement illustrates that changing crop patterns are a response to the markets, price drivers and a potential for maximum profitability. “Initially forages were being put into row crops but now the shift is from corn to soy.”

**Changes in Conservation Efforts**

Stakeholders across the state disagree to some extent on the effect the bioeconomy has had on conservation efforts in the past two years (Figure 6). The majority of districts addressing this Topic (79%) say conservation practices have declined. Half of that proportion says conservation efforts have actually increased. Some districts noted few if any differences in conservation practices. We mapped these results, along with the location of current ethanol plants, to see whether a spatial pattern might emerge from the results (see Appendix 3). Extension districts not choosing to address the question are not colored. Districts reporting a decrease in conservation are depicted in blue and districts reporting an increase in conservation are depicted in yellow. Those with overlap (those reporting both increases and decreases) are colored pink. In brief, mapping this information shows a predominance of districts reporting only decreases in conservation versus those reporting only increases (in yellow). However, there are many districts reporting both increases and decreases, suggesting the need to conduct further research on the subject.
**Decrease in conservation practices.** Of the total districts responding to Topic 2, the majority reported a decline in conservation practices. This was by far the greatest change phenomenon noted by participating districts. Specifically, stakeholders mentioned reduced farmer participation of the Conservation Reserve Program (CRP), increased tillage, environmental decline related to the use of larger farm equipment, and a general discussion of various other conservation issues.

Within this discussion the overwhelmingly dominant theme was a decrease in CRP participation. “I have seen a huge amount of CRP acres coming out [of the program] to put into production” stated one respondent. Another district stated “CRP acres are being put back into corn and soybeans.” Some districts noted the economic motivation for this shift. As one stakeholder put it, “CRP acres have been put back into row crop production due to higher grain prices.” The decrease in CRP land was noted by respondents as contributing to a loss of wildlife habitat. Many respondents expressed regret that marginal and sensitive lands were being put back into production. “Highly erodible land is planted now--it shouldn’t be, but it is.” Another district reported a “concern over water quality if marginal CRP acres are shifted into production.”

Other themes within the decrease in conservation discussion included increased tillage. One respondent said “I’ve noticed an increase in tilling practices.” The increase in tillage was a frequent issue brought forth by conversation participants, and is in accordance with other findings such as increased corn acres, increased corn on corn, pasture and forage crops converted to row crops, and a decrease in CRP land.

The use of larger farm equipment was also linked to a decrease in conservation. “Move to larger equipment is unfriendly to terraces and waterways.” “Terraces are knocked down to accommodate the large equipment.” One respondent explained that large farm equipment can “tear up” the soil nearly as much as cultivation does.
The general discussion of decreased conservation touched on a variety of issues. “More wetlands tiled out,” reported one district. “More cropping into ditches and edges of fields. This is bad,” stated another district. “Some farmers are farming right up next to the river.” Finally, one district reported, pun possibly intended, “some conservation efforts are eroding.”

Increase in conservation practices. An increase in conservation practices was noted by 40% of districts responding to Topic 2. A reduction in tillage was the most common practice included in the notes. Additionally, districts report an increase in use of livestock manure as fertilizer, an increase in buffer strips and terraces, and an increase in general conservation consciousness and practices.

“There is less tillage each year” stated one respondent. No-till management practices seem to account for some of this decrease in tillage. As one set of notes read: “No-till is becoming the norm.” Another district reported: “No-till is being practiced by more farmers.” The rising cost of fuel partially explains this change in tillage practices. Farmers are conserving fuel by adopting lower tillage practices. “High fuel costs have reduced fuel usage in tillage.” Other districts reported a general decrease in tillage, but did not specify the reason. “Farmers are doing one tillage trip rather than two.” Similarly, another district stated that there is “less tillage, less plowing and fall tillage.” Less fall tillage was an observation noted by several districts.

More environmentally sound fertilizer practices are being implemented, according to conversation participants. “More farmers are being careful about how much fertilizer they put on.” Due to the high cost of synthetic fertilizers, districts reported a decrease in their use. Livestock manure is used instead, and most districts contributing to this discussion identified an increase in manure use. Several districts’ notes support this claim. “Farmers are looking at manure rather than high cost commercial fertilizer.” Other changes in fertilizer practices were noted. “More people are considering use of side dress and starter fertilizer, and many are fine tuning their nitrogen fertilizer.”

Erosion and runoff control practices such as buffer strips, turn strips, and terraces were also noted. An increase in buffer strips was the most common erosion and runoff control practice mentioned. Two districts noted that these practices were being implemented to allow for increased production. “There have been more terraces and tilling going into land both to increase productivity and provide conservation.”

The remainder of the conservation practices identified includes a general increase in attentiveness to conservation practices. One district reported that people are “more sensitive to conservation.” Other districts identified increases in conservation practices, but did not specify the type or reason. “More conservation practices put on highly erodible ground.” “Others have changed their farming practices to be more ecologically sound.”

No or little change in conservation. Seventeen percent of districts reported that there has been little or no observed change in conservation practices within their district.
Effects of Higher Feed Costs on the Livestock Industry

Not surprisingly, stakeholders say the bioeconomy is having a significant impact on the livestock industry (Figure 7). Six categories of change within the livestock industry were mentioned in the bioeconomy conversations. The most prominent impact is a decrease in profitability of livestock producers. Other categories mentioned but to a lesser extent are an increase in co-product use in livestock operations, greater vertical integration of the industry, an increase in alternative livestock production practices, and an increase in the market value of manure.

**Figure 7. Effects of Higher Feed Costs on Livestock Industry**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent of districts mentioning...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased profitability of livestock producers</td>
<td>91%</td>
</tr>
<tr>
<td>Increased use of co-products</td>
<td>36%</td>
</tr>
<tr>
<td>Greater vertical integration</td>
<td>26%</td>
</tr>
<tr>
<td>Increase in alternative livestock production practices</td>
<td>15%</td>
</tr>
<tr>
<td>Manure value increase</td>
<td>13%</td>
</tr>
<tr>
<td>No or little change</td>
<td>6%</td>
</tr>
</tbody>
</table>

*Decreased profitability of livestock producers.* “I don’t know how to keep this farm going,” stated one livestock producer. One district’s notes simply read, “Empty feedlots.” Nine in ten districts responding to Topic 2 discussed the financial hardships currently experienced by Iowa’s livestock industry.

Some districts asserted that financial hardship exists among all livestock sectors, but some are more severely affected than others. “This has really screwed up the livestock producer. Benefits are there for the beef and dairy industry, but it is really hard on the swine producer.” Another district reported, “[We have] less livestock production and empty feedlots although more cattle feed with ethanol [co-products].” Additionally, several notes indicated that farm size is a factor in “riding out the storm.” Many districts reported that “smaller” livestock producers are disproportionately experiencing reduced profitability. “The small farmer is getting out because of economics, but big cattle yards are okay for now.” “Small producers are leaving the industry.” “Small producers are liquidating.”
The sharp decrease in profitability was mainly attributed to increased grain prices. “[We have] less producers locally because of the increased feed costs.” The cost of other inputs was not explicitly mentioned. In the main, the notes report that there are “higher production costs for feeding livestock.”

Various methods of reducing the cost of livestock production were brought up in the conversation notes. Some producers stated they are selling cattle early instead of finishing them off on a diet of costly grain. “We converted to a cow-calf herd to raise to a certain poundage and then sell to someone else to feed finish.” One district reported, “Cattle feeders tend to be buying heavier yearlings” so they can trim back investments in feed. One district mentioned a reduction in infrastructure investment. The availability and use of dried distillers grain (DDG) was noted as a benefit to cattle producers, but not to other livestock sectors. “DDGs are helping with the cattle industry, but until oil is fractionated out the swine and poultry will still struggle.” One district was more succinct in summing up its discussion on the bioeconomy’s impact on the livestock industry: “More grain and less livestock.”

*Increased use of co-products.* With the emergence of the biofuel industry and ethanol plants across the state, co-products resulting from processing grain into ethanol have become a more commonly available feed source for livestock. One in three districts responding to Topic 2 report increased use of co-products as livestock feed. This is primarily the case with cattle and much less so with other livestock species. One district reported that “Both cow/calf producers and cattle feeders are looking at all the ways possible to use co-products in their feeding programs.”

According to stakeholders, co-products are a double-edged sword. They offer potential advantages to the livestock industry but also create challenges. According to one district, “Distiller's grains allow us a huge competitive advantage in cattle feeding. We need them.” A similar report was offered by another district: “DDGs are helping with the cattle industry.” Co-products offer an advantage since they provide livestock producers with a less costly feed option when the price of corn is high. On the flip side, respondents report that the quality and content of co-products are not reliably consistent, thus creating challenges for livestock producers. “A 4-H livestock superintendent made a comment that he sees lower feed efficiencies with DDGs.” Another district said there is a “… lack of consistency in the [co-]products for usability with livestock, especially with the hog industry.” A third district further drove home this point: “Nutrition and the byproducts are important, but acceptability as a viable feed source is still questionable.” Overall, respondents are in favor of using biofuel co-products as a means to diversify their feed sources and reduce input costs, but say it falls short of expectations in terms of consistent quality.

*Greater vertical integration and consolidation.* One in four stakeholders in districts addressing Topic 2 observed that the bioeconomy is contributing to more vertical integration of the livestock industry. Conversation participants report that vertical integration offers financial security for producers, and is favored during times of economic instability. “[There are] more contract producers because they can lock in a profit. We are seeing more change over to contract production.” A second and third district reported: “Farrowing has become highly integrated,” and “[There is] no such thing as an independent farrow to finish hog operation [anymore].”
Consolidation of the livestock industry was also noted. “The top 20 firms control 80% of hogs,” stated one district. The following two excerpts from other districts further make this point. “Large corporations are taking over our small farms.” “The swine industry has continued to consolidate.” In this respect, increased vertical integration and consolidation was regarded in a negative light. These stakeholders are not content with the direction ownership structures are moving, and made references to threatened farm livelihoods. “A parent mentioned that her son is going to ISU and has a dream to come home and farm. It is still possible?”

*Increase in alternative livestock production practices.* A modest proportion of districts responding to Topic 2 (15%) reported an increase in alternative livestock production and marketing methods. “Large scale operators are driving up the prices but there are also some farmers who are raising grass-fed livestock…” Another district mentioned niche pork production. In-depth reasons for this were not provided.

*Manure value increase.* Thirteen percent of districts responding to Topic 2 reported an increase in the value of manure. “Manure is now of greater value.” One district indicated that the increase in the value of manure is tied to the increased price of synthetic fertilizers. Manure sales were also noted as a source of income for livestock producers. “Producers forced to explore other revenue streams [are] selling manure for crop nutrient value.”

**Topic 3. Factors Determining the Cost of Food**

By far, the topic that generated the most interest among districts was the one on factors related to food costs. More than two out of three districts (69%) selected this topic to discuss. Questions posed as part of this discussion asked participants to provide feedback on:

- What ISU Extension should do to help consumers understand and manage their food expenditures;
- Whether participants have noticed stronger support for local foods in their community as energy and food prices have increased;
- How higher energy and commodity prices are affecting their food choices; and
- Whether higher fuel and commodity prices are influencing whether people are eating more meals at home.

**Strategies for Helping Consumers Manage Food Costs**

Participants in the community conversations offered a variety of responses to the question on what the role of Extension should be in helping consumers better understand and manage household food costs. Their responses were coded and categorized according to four broad categories shown in Figure 8 and detailed in the text below.
Educate consumers on food purchasing, preparation, and preservation. The majority of districts (79%) suggested that Extension should focus on enhancing home economic skills among consumers as it pertains to food ("Whatever happened to home economics class?" asked a participant in one of the districts), especially food buying decisions, preparing food from scratch, and teaching food preservation techniques. Specific suggestions included:

- Food buying. As part of educating consumers on food buying decisions, suggestions focused on conducting comparative research on eating out versus eating in to demonstrate the increased costs associated with eating out (although one district recognized the need to support local restaurateurs while at the same time keeping household food costs low). Others suggested Extension develop tools to help families track their food expenses, data that could, in turn, be used to educate families and others about cost-saving measures and the value of buying the basics. Such cost-saving measures might require more time spent on food preparation, but financial gains are expected in terms of lower health care costs, lower spending on food packaging and beyond-home processing, and getting more nutritional bang per buck (resulting from a reduction in the consumption of [unhealthy] processed food). Still others thought it important to prepare tip sheets to show consumers how to simply and easily stretch their food dollars by purchasing store rather than name brands. "The Healthy Meals in a Hurry and Budgeting Basics programs have been very popular and teach how to stretch the [food] dollar without sacrificing nutrition."

- Preparing food from scratch. Participants emphasized the need to educate consumers about basic cooking techniques using food staples. A common theme that emerged from these discussions was the need to plan ahead, an activity largely eliminated by the convenience food movement. However, it was noted that a counterculture has begun to emerge especially among young people who are cultivating epicurean interests in food. Regarding this latter point, a handful of districts made a clear connection between food...
consumption and contemporary culture, noting that education alone is a necessary but insufficient instrument to promote healthy eating habits. As one district reported, "A lot of eating out is ingrained in our culture; education may not make a lot of difference in people's spending habits," suggesting that Extension is in a unique position to understand the core cultural values that drive what and how people choose to eat and combine that with educational resources to create effective programming.

- Teaching food preservation techniques. Participants suggested Extension could help consumers better understand and reduce household food costs by teaching (safe) food preservation techniques in the home such as canning and freezing, which has been key Extension territory for decades.

Conduct research and education on factors affecting food prices. Figure 8 also shows that more than two in five districts (43%) felt consumers (and the agricultural community) would be well served if Extension conducted research and education on market and other forces influencing food prices, including the powerful grocery and oil company lobbies. Across the board, strains of this theme echoed the need to dispel the widely held public belief that farmers and the ethanol industry are to blame for higher food prices.

We need to help the general population understand that a small percentage of the food dollar is returned to the agricultural producer. Grocery marketers did a really effective job this summer of pinning rising grocery prices on petroleum increases. Now petroleum is down, but grocery store prices remain high. High prices in the grocery store are not the fault of grain farmers or the fault of ethanol.

Districts suggested that the most effective and efficient way to counteract negative publicity about farmer culpability in terms of rising food prices is for Extension to target the media. "The media gets it wrong." "[Extension] needs to educate the new media about the real reasons for price increases through newspaper columns and arranging interviews with producers."

Comments from one district suggested funding such an effort through checkoff dollars collected from producers to deliver a public education campaign.

Provide programming on family and community food production self sufficiency. In response to the question asking participants what Extension should do to help consumers understand and manage food costs, one in four districts (27%) brought up the need for food production self sufficiency at the family, community, and sometimes regional level. The most commonly cited forms of food production self-sufficiency were home gardens and community gardens, although districts raised the issue of building infrastructure such as greenhouses and supporting activities that will help them become food self-sufficient. Comments from one district also pointed out the non financial, multiple benefits food self sufficiency can offer families. "Gardening helps families save on food spending and has other advantages like pride, exercise, and stress relief."

Work with food assistance programs. Finally, nearly one in ten districts addressing the topic of helping consumers manage food costs raised the issue of coordinating resources with existing food assistance programs. They suggested partnering with agencies and initiatives working with low income families through the schools or in the community. Several districts expressed
concern that Extension does not have access to audiences who have the greatest need for the kind of information that could help them the most.

Support for Local Food

The second issue community conversation participants addressed within the rubric of influential food cost factors centered on support for local food. Participants were asked whether they had noticed stronger support for local foods in their communities concurrent with rising energy and food prices. Figure 10 shows that the vast majority (85%) of districts addressing this question noted an increase in support for local food while one in five (21%) said they noted no or little increase. (Note that percentages for each category will not add up to 100% since some districts did not reach consensus on this point, instead noting some variation).

Figure 10. Support for Local Food as Food and Energy Prices Rise

<table>
<thead>
<tr>
<th>Percent of districts mentioning...</th>
<th>0%</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>An increase in support for local food</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No or little increase in support for local food</td>
<td>21%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Increase in support for local food. Participants mentioned the following indicators as evidence of greater support for local food in their districts and communities:

- Generalized increased demand for local produce and producers that exceeds supply;
- Increased interest in and creation of community gardens;
- Increase in the number of Community Supported Agriculture (CSA) operations;
- Decreased capacity of existing CSAs to meet demand (demonstrated by waiting lists to join);
- Increase in the number of vendors/producers at farmers' markets;
- Increase in the volume of locally grown produce at farmers' markets;
- Increased interest in and patronage of farmers' markets;
- Increase in the number of grocery stores in their communities carrying locally grown and raised products;
- Increased viability of stores selling locally grown food;
- Increased prevalence of home gardens;
- Increased demand for local meat;
- High demand for local meat processing and butchers;
- Willingness of farmers to convert some land in row crops to vegetable production;
- Increased participation of community-based groups such as Chambers of Commerce in supporting locally grown/raised foods;
• Increased participation of schools in developing curricula and delivering programs related to local food production;
• Increased institutional demand (from local colleges and universities) for local food;
• Increase in parental requests that their children be served healthier food in schools; and
• Increased signage and labeling of locally grown food on store shelves.

Participants also took the liberty to reflect on reasons why they observed greater support for local food in their area. Most noted changes in consumer awareness and habits in response to:

• Rising fuel costs ("Labor and petroleum prices are incentives to produce at home"; "People are finding out that they can save fuel by purchasing locally grown food");
• Food safety worries ("Food scares we've had make people buy local"); and
• Concerns about the environment and eating "healthy," differentiated foods ("People want to know where their food is grown and processed;" "Local residents are interested in foods with less chemicals;" "There is an increased interest in organic, free range, and locally grown food due to limited chemical or artificial interference. The desire to limit transportation and packaging is also a factor contributing to this local trend. This willingness to invest in localism may also be the desire for a quality of life more grounded in balance and diversity than we've had in recent years.")

No or little increase in support for local food. Fourteen districts (21% of districts addressing this topic) noted no or minimal increases in support for local food. One district noted a decrease, based on a decline in the number of vendors selling at assorted farmers' markets. Again, participants expounded on why there was no or little support for local foods.

• "People still go wherever they find food the cheapest, even if it means driving."
• "Local stores do not carry a wide variety [of food]."
• "We have not seen an increase in farmers' markets because of energy prices."
• "There is not the mentality in our area to buy locally grown foods. [People] on the East and West coast want to buy food from the person who grows it, but locally we have so much confidence in our food supply that this is not a motivator to buy locally grown foods."
• "There's not really a local food presence in our county."

The Effect of Energy and Commodity Prices on Food Choices

When participants were queried about the effect higher energy and commodity prices were having on their food choices, responses fell into three broad categories: Higher energy and commodity prices are driving changes in what people choose to eat, where they choose to eat, or they are having no effect at all (Figure 11). A note of caution, however, is warranted at this point in the discussion. The notes we received show that in about half of districts responding, participants answered the question in terms of the effect higher prices were having on other people in their communities rather than the effect they are having on their own food choices. Regardless, the data support the notion that higher prices are ultimately changing how people shop, which in turn drives what they eat and where they eat.
Figure 11. Effect of Higher Energy and Commodity Prices on Food Choices

<table>
<thead>
<tr>
<th>Impacts on what people eat</th>
<th>55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on where people eat</td>
<td>52%</td>
</tr>
<tr>
<td>Little or no effect</td>
<td>24%</td>
</tr>
</tbody>
</table>

Percent of districts mentioning...

**Impacting what people eat.** There is general agreement that higher prices are prompting people to frequent more economical grocery stores and/or choose less expensive store brands over name brands. However, the data from the districts show there is substantial disagreement about how this might be impacting the quality of food they buy. For example, some districts said people are sacrificing food quality to save fuel by buying less expensive, "unhealthy" foods that are more readily available locally. "There was a general feeling that consumers are purchasing foods that are lower in cost and perhaps not eating "healthy" as a result."

"Young families don't buy fresh fruits because they are too expensive." "Students have commented that local stores seem to be stocking up on more cheap, non nutritious foods than before."

"Grocery stores have seen more hamburger and hot dog purchases and increased demand in canned meats like SPAM."

"A local HyVee manager said s/he is seeing changes in people buying cheaper cuts of meat and buying less fresh produce."

By contrast, others said people are turning away from highly processed, ready-to-eat products in favor of less expensive staple foods with higher nutritional value. "We are eating less processed food and packaged food and more fresh fruits and vegetables." The health implications of these claims, either way, could be significant. If people are eating lower quality foods in response to higher food and fuel prices, health care costs can be expected to rise in the future. If, on the other hand, people are actually eating higher quality foods as a result of higher commodity and fuel costs, health care costs might drop, providing unanticipated but positive benefits. These issues, however, can rarely be reduced so easily. The more likely reality is that high food and fuel prices will have differential impacts on different populations based on the position each occupies along the socioeconomic continuum. "There is a sense that higher prices have caused some low income families to choose less nutritious foods such as pastas and rice rather than the more costly fresh produce."

This is not surprising, given that lower income families spend a larger proportion of their household income on food when compared to higher income families. This might explain (in part) why one in four districts (24%) said higher commodity and fuel prices were having no effect. "Perhaps [higher prices] are affecting a very small percentage of our population, but for the most part, [they aren't]."
Impacting where people eat. There was little disagreement about the effect of higher prices on where people choose to eat. Of the 52 percent of districts that alluded to this subject, the majority observed people were generally eating more at home and taking their lunches to work, rather than eating meals at restaurants. "All participants agreed. Higher prices in restaurants, coupled with high costs of gasoline this summer are changing patterns." However, others nuanced this conversation by adding that some people are still choosing to eat out, but are frequenting less expensive establishments that tend to serve "unhealthy" fast food versus (ostensibly healthier) "full service" food. "There is less restaurant traffic but McDonalds' sales are up." Again, the issue of changing patterns of quality food consumption surfaced. In addition, participants in a handful of districts mentioned meat consumption had declined or people were buying less costly cuts of meat. When participants were directly asked whether they were eating more meals at home, half (49%) said "yes" while one in three (36%) said "no" (Figure 12).

Figure 12. Are You Eating More Meals at Home?

| Percent of counties in general agreement |
|-----------------|---|
| Yes             | 49% |
| No              | 36% |

Topic 4. The Effects of Rising Food and Energy Prices on Families

In the previous section, we discussed some of the impacts rising food and energy costs might be having on decisions people make about what food they buy, what they eat, the quality of the food they eat, and where they choose to eat. In this section, we will analyze data from the community conversations as it relates to the overall household coping strategies in the shadow of rising food and energy prices. Ranking fourth out of the six topics offered, 41 of the 97 reporting Extension districts (42%) chose this topic to address in their community conversation. Questions in this topic were aimed at gathering information about:

- Adjustments families are making due to the rising cost of living;
- Families most affected by the rising cost of living; and
- How communities are responding to the growing gap between the "haves" on one end of the spectrum and the "have nots" on the other end.
How Families are Coping with Higher Living Costs

Reducing food costs. When community conversation facilitators asked participants to describe adjustments families are making as a result of the higher cost of living, nearly every district (98%) said households are reducing their food costs (Figure 13). Specific strategies within this category include:

- A greater reliance on public assistance such as food stamps, food banks, free and reduced school lunch programs, and senior meals;
- Greater use of food coupons;
- Taking advantage of food sales;
- Eating less expensive and less nutritious food;
- Eating out less;
- Growing home gardens;
- Preserving homegrown food;
- Investing in food storage methods and devices such as freezers and canning equipment;
- Hunting;
- Eating less meat; and;
- Eating less food overall.

Figure 13. Strategies Families Are Using to Cope with the Higher Living Costs

Reducing fuel costs. Strategies families are using to reduce household and transportation fuel costs include:

- Reducing unnecessary errands and trips;
- Living in communities in which they work;
• Planning more to combine trips;
• Lowering the thermostat;
• Installing energy saving devices in their homes;
• Engaging in active transportation such as walking and biking;
• Vacationing closer to home;
• Carpooling;
• Eating out closer to home; and
• Driving more fuel efficient vehicles.

Restricting household spending. The category warranting mention from 66% of districts was that concerning restricted household spending (above and beyond reductions in food and fuel spending). Participants report households are tightening their belts by:

• Reducing charitable giving;
• Eliminating spending on luxury and convenience items;
• Limiting entertainment spending, including cable TV;
• Buying fewer or used clothing articles;
• Buying generic brands (both food and medicine); and
• "Skimping on insurance" and delaying health or dental care until absolutely necessary.

Families Most Affected by the Rising Cost of Living

Low income families. Not surprisingly, according to participants families most vulnerable to the rising cost of living are low income families (Figure 14). These were referred to as low wage earning families living from paycheck to paycheck, some of which rely on public assistance for support. The demographic composition of this category varies, but was recognized as including single parent families with fixed childcare expenses (and little wiggle room for changes in their household economy), vulnerable minority and new population groups on the margins of socioeconomic inclusion, and young families. One district pointed out that in addition to having an income disadvantage, low income families face additional downward leveling pressures because they typically can only afford to buy older homes and vehicles, which tend to be less energy efficient and therefore more costly.

Fixed income families. The category of fixed income families was distinguished from low income families simply because those on a fixed income are not necessarily low income, although they can be. These families are traditionally comprised of elderly residents, usually retired, who like low income families, have little or no cushion to fall back on when prices rise.

Geographically disadvantaged families. Geographically disadvantaged families include people living in flood zones (of particular concern given the recent floods in 2008) and rural residents. Rural residents, because they live further from general services than in-town residents, are considered geographically disadvantaged because they often have higher transportation costs to access services in the absence of public transportation.
Figure 14. Families Most Affected by the Rising Cost of Living

<table>
<thead>
<tr>
<th>Family Type</th>
<th>Percent Mentioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income families</td>
<td>85%</td>
</tr>
<tr>
<td>Fixed income families</td>
<td>37%</td>
</tr>
<tr>
<td>Middle income families</td>
<td>17%</td>
</tr>
<tr>
<td>Geographically disadvantaged</td>
<td>5%</td>
</tr>
</tbody>
</table>

Community Support for Vulnerable Families

The last question Extension facilitators asked in terms of the effects rising food and energy prices are having on families targeted community support. How are communities responding to the growing gap between the "haves" and the "have nots"? Seven percent of Extension districts answering this question said their communities were doing nothing to bridge the gap. "Communities are not responding to the gap." Several provided no responses to this question. The remainder said they are:

Increasing Charitable Donations. More than half (56%) said communities are increasing charitable donations, in direct contrast to data presented in the previous section that suggested people are actually scaling back charitable giving in order to reduce household spending. Anecdotes abound among participants about the kinds of charitable giving taking place in their communities. "The food donations this season are higher than ever. So there was the discussion that the 'have nots' are a growing number, but the 'haves' are generously trying to meet their needs." Another district explained it in more relative terms:

There have been greater efforts to hold community fundraisers to establish funds for families in need to cover utilities and to gather food for pantries. There are more people who need help, making [it seem like there are] fewer people to give more.

One community formed a think tank comprised of town leaders to address ways the community might collectively respond.

There was a realization that the answers aren't easy. However, a position was created called a "Family Advocate" who works in the schools working with families to shepherd them through some of the issues they are facing. This includes working with and connecting them to services, and providing one-on-one education and support.
More concrete and systematic measures of charitable giving to food banks, children's programs, and United Way for example are therefore necessary to determine whether charitable giving is actually up or down across Iowa.

**Topic 5. Renewable Energy’s Place in the High Energy Cost Picture**

Ranking third among the topics presented for conversation, 45 of the 97 reporting Extension districts (46%) chose to address the issue of renewable energy. Participants were asked to identify the following:

- The factors driving up energy costs;
- The forms of renewable energy sources that have the potential to supplement the overall energy supply within the next five years; and
- The renewable energy sources that participants would like to employ directly in their homes or businesses.

Though it was not specifically addressed in the questions for this topic, one in five specifically addressed the issue of energy design and efficiency. The discussion on energy design occurred in conversations about renewable energy, as well as conversations about the role of ISU Extension in improving the effectiveness of community conservations efforts (discussed in the next topic). The subject of energy design will be addressed at the end of this section, combining relevant responses from both topics.

**Factors Driving Up Energy Prices**

Participants in this portion of the conversation were asked to identify their perceptions regarding the factors contributing to the rising price of energy. By far, the two dominant responses alluded to market speculation (69%) and increased energy demand (67%), as depicted in Figure 15. Minor themes included the global economy (22%), environmental and other regulation (16%), and issues around energy production and problems related to distribution infrastructure (13%).
Of the 31 districts that cited market speculation, one out of every three specifically mentioned corporate greed. Other responses related to market speculation included mentions of the stock market, hedge funds, investment markets, and “rumored OPEC meeting with [the] CEOs of giant corporations.” One district “stated that the ocean is full of oil tankers that cannot get unloaded for our use.”

Two out of every three districts discussing the issue of increased energy demand discussed it in terms of global demand, specifically citing energy demand from India, China, and the “developing world.” However, 20% of the districts addressing this issue also discussed the issue of domestic demand and lifestyle choices or expectations:

\[
\text{We want energy! As Americans we need to use less. Then the prices will drop. Look at the lights on at night all over the countryside. We just use so much more!}
\]

There was also a direct link to automobile choices:

\[
\text{With respect to petroleum, we had quite a few years where SUVs and pickups were widely purchased which were inefficient users of fuel (low mileage rates). We basically squandered a large amount of petroleum.}
\]

Two districts also listed the war and military involvement as contributing factors to the rise in energy prices.

Most of the discussion points coded under the heading of the global economy centered on the weak value of the US dollar, though two of the conversations did mention global instability (in Russia, Iraq, and South America) and regional conflict in the Middle East.

Though government regulation was not a significant topic within this conversation, when it came up, it covered a wide range of political viewpoints, including:
Environmental policy and the clash between the need to provide inexpensive energy and the need to protect the environment;
Government involvement in the marketplace; and
The “lack of government mandates on automobile consumption.”

However, of the seven districts that addressed the issue of government regulations, three blamed environmental policy and the environmental agenda.

The 13% of infrastructure issues included comments on:

- An out-of-date electric grid that does not allow easy access to renewable energy sources like wind and solar;
- The distribution cost of biofuels;
- The lack of US oil refineries; and
- An inefficiency of scale with regard to renewable energy sources (they are not prevalent enough to make a difference in the cost of energy).

**Promising Renewable Energy Sources**

When asked to identify renewable energy sources that might supplement the overall energy supply in the short term (within the next five years), three out of four districts (78%) addressing this issue identified wind power as a potential source. Over half of the districts (51%) also identified biofuels as an option. Other answers were categorized as solar (33%), nuclear (24%), hydro (18%), methane (11%), others (7%), and geothermal (7%) (Figure 16). The broad categories are defined in detail below.
• **Wind.** Several Extension districts noted that wind power was desirable, but not always dependable. Four noted that wind power was expensive, but still a good option, especially if subsidies continued. Two districts also questioned whether or not the potential of wind power could be realized in the given time frame (of five years).

• **Biofuels.** Ethanol, biodiesel, and butanol were all captured in this category. Three districts mentioned algae as a source of biodiesel. Ethanol was identified by its source: corn, soybeans, sugar, biomass, and cellulosic. Ethanol was also discussed in relation to existing infrastructure, including subsidies and the roll of big investors.

• **Solar.** Though a third of the districts addressing this topic identified solar power as an option, there was not much discussion beyond that. One district “wondered what happened to the solar energy possibilities,” while another observed, “solar energy does not seem to have gained credibility with the general public.”

• **Nuclear.** Participants who cited nuclear power as an option generally recognized it as cleaner and safer than it was in the past.

• **Hydro.** These responses cited river turbines, Thermo Hydro Wave Generators (which use ocean currents), and the Mississippi River as possible sources of hydropower.

• **Methane.** Methane received limited attention, but one district expressed a desire for large and small-scale production. Another stated that it needed to be cost-effective.

• **Others.** This included timber, coal technology, natural gas, and hydrogen.

• **Geothermal.** The districts citing this offered no elaboration.
Renewable Energy Sources in Homes or Businesses

When stakeholders discussed preferences for renewable energy sources in their own homes and businesses, about half of the districts listed wind (51%) as a desirable energy source. Solar (42%) and geothermal (40%) ranked second and third, respectively, in districts answering this question. Stakeholders also listed biofuel (11%), wood (11%), methane (9%), and corn and stover (7%) as potential sources of renewable energy (Figure 17).

Table 17. Renewable Energy Sources Stakeholders Want to Employ in Their Home or Business

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Percent of districts mentioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>51%</td>
</tr>
<tr>
<td>Solar</td>
<td>42%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>40%</td>
</tr>
<tr>
<td>Wood</td>
<td>11%</td>
</tr>
<tr>
<td>Biofuel</td>
<td>11%</td>
</tr>
<tr>
<td>Methane</td>
<td>9%</td>
</tr>
<tr>
<td>Corn and stover</td>
<td>7%</td>
</tr>
</tbody>
</table>

- **Wind.** Five districts specifically mentioned small-scale wind turbines for farms and homes. Two addressed the issue of cost, and two expressed an interest in additional research. One district suggested that ISU might play a role in research and in exploring the zoning issues around home wind turbines. Another suggested that wind might be an option for small schools.
- **Solar.** Of the 19 districts listing solar sources as a preferred energy source, only one addressed economic feasibility issues. Two districts elaborated on their responses by citing the potential to use solar as a heat source: “One local farmer is planning on putting in [a] solar water heater for his home.”
- **Geothermal.** Several stakeholders in the 18 districts mentioning geothermal said it is useful as a source of home heating and cooling. “Geothermal heat was part of the new school district plan for new construction. I’d like to have geothermal installed when my furnace is ready for replacement.”
- **Biofuel.** Ethanol was the most common biofuel listed. However, there was one mention of biobutanol. There was also a mention of a small biodiesel plant.
• **Wood.** Wood and pellet stoves were the most common reference to wood as a source of energy.
• **Methane.** Most responses that mentioned methane did not elaborate, but one did specify the creation of methane from human waste.
• **Corn and Stover.** Corn and stover were used in corn stoves.

### Energy Design and Efficiency

The theme of energy design and efficiency was not specifically addressed by any of the topics or questions posed in the conversations. In spite of that, 20% of reporting districts brought up the subject in the course of the conversations. The topic came up principally during discussions on renewable energy’s role in rising energy costs, and again during conversations about the future role of Extension. Because similar themes arose across topic areas, the relevant references were brought together for coding and analysis.

**Energy Efficiency.** A total of 10 districts or half of those raising energy design and efficiency issues said a discussion of energy prices and renewable energy sources must also address the issue of energy conservation. Participants mentioned everything from mass transit, to energy efficient light bulbs, to public education programs.

**Infrastructure Design and Efficiency.** Twelve districts were concerned with designing for efficient energy use, and creating the infrastructure necessary for alternative fuels and energy conservation. Designing new automobiles was a consistent theme. Stakeholders here talked about developing more fuel-efficient vehicles, natural gas powered trucks, hybrid cars, electric cars, and hydrogen cars. Participants also discussed green construction, including the use of geothermal energy in new construction, green certification of new buildings, and building structures that are “green-friendly” (those that fit the climate and use natural lighting). There was also some discussion on community heat generation as a way to maximize efficiency and recapture heat from industrial processes.

### Topic 6. From Vulnerability to Resiliency: Iowa Agriculture in the Age of Biorenewables

Just over a third of reporting districts chose to address the issues of agriculture and conservation presented in this topic. Questions for this topic were designed to address:

• Community concerns about agriculture’s impact on the quality of soil, water, and wildlife habitat;
• Personal involvement in improving water quality and supporting other conservation efforts in the watershed; and
• The role of ISU Extension in helping to improve the effectiveness of community conservation efforts.

Community Concerns About Agriculture’s Impact on the Quality of Soil, Water, and Wildlife Habitat

The concerns that arose in discussions about soil quality, water quality, and wildlife habitat were varied and covered a wide range of topics. Figure 18 shows the distribution of broad categories captured through the conversations. By and large, the greatest concern was for water resources (82%), followed closely by concerns about soil degradation (71%) and the lack of good land stewardship (62%). Minor themes included concerns for the loss of wildlife habitat (21%), conversations on the role of policies and agencies (15%), and public perceptions of agriculture’s impact on the environment (9%).

Table 18. Concerns Heard or Observed in Communities about Environmental Impacts of Agriculture

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent of districts mentioning...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water resource protection</td>
<td>82%</td>
</tr>
<tr>
<td>Soil degradation</td>
<td>71%</td>
</tr>
<tr>
<td>Lack of land stewardship</td>
<td>62%</td>
</tr>
<tr>
<td>Wildlife habitat loss</td>
<td>21%</td>
</tr>
<tr>
<td>Policy and agency related concerns</td>
<td>15%</td>
</tr>
<tr>
<td>Incorrect public perception of agriculture’s impact</td>
<td>9%</td>
</tr>
</tbody>
</table>

Protection of water resources. A total of 28 or four out of five districts (82%) addressing this topic raised issues concerning water resources. Responses included a wide range of topics related to water, from concerns about water quantity, to concerns regarding non-agricultural sources of contamination. Water quality was the most prominent concern raised, with eight districts specifically identifying nitrates as a problem, and four listing concerns related to manure management:

*Water quality is a disgrace to the state... Nitrate removal through the wetlands--when it rains hard, it comes through the drainage system, if the wet areas could be set to filter the land--could there be incentives?*
One district raised the issue of pesticide and herbicide run-off, and five listed general concerns about groundwater (including supply and the regeneration of aquifers). Three addressed concerns about the impact of water quality on tourism and recreation areas, while one mentioned water quality in relation to economic growth.

A second major theme in the discussion on water had to do with erosion and how water leaves the land. A handful of districts expressed concern with the speed with which water leaves the land (due to tillage, terracing, and the streamlining of waterways). Flooding was specifically identified by only one Extension district, but seemed to underpin other conversations related to erosion and the way in which water travels through the watershed. Silt was mentioned as a concern in terms of:

1. Reducing a reservoir’s capacity;
2. Impacting hydropower options and navigation in the Mississippi; and
3. Impacting the recreational opportunities in the Iowa River.

Other concerns discussed in the context of water quality included:

- The impact of the ethanol industry on water supply and water quality (in relation to increased corn and soybean production and hypoxia);
- The impact of decreased soil organic matter on water quality; and
- More holding ponds to slow down flooding.

Though one Extension district implied that agriculture’s impact on water quality needed to be addressed, they acknowledged that it was not a “sexy” topic. Indeed, four districts raised the issue of non-agricultural threats to the water supply. One district suggested the need for more research on the real causes of hypoxia (industry and urban centers), while others called for more urban planning. There was a significant, but minority, opinion that farmers are bearing a disproportionate share of the blame for water quality issues.

**Soil degradation.** By far, the single dominant concern in relation to soil had to do with erosion—16 of the 34 districts addressing this question (47%) listed erosion as a major issue. To quote one response: “A farmer can’t let the land keep washing away at 20 tons per year.” In fact, many other concerns regarding soil quality relate back to erosion, including discussions on tillage and terracing, and the removal of corn stalks from fields. Other concerns included nutrient and fertility loss, and the loss of organic matter in soils. Participants advocated for an increase in no-till practices and the use of alternative crops. Only two districts raised concerns related to the ramifications of increased production, and the consequences of putting more acres into row crops.

**Lack of good land stewardship.** This category attempts to capture a general attitude expressed by participants in response to this question. A lack of good land stewardship was indicated by practices or expressions that allowed profit and production goals to prevail at the expense of land resources, water quality and wildlife habitat. Several responses credited high grain prices for practices that were detrimental to conservation, including:
• Taking land out of CRP and putting it into row crops;
• Planting fence row to fence row;
• Converting marginal land into row crops;
• Increasing tillage and decreasing rotations; and
• Reducing diversity to take advantage of the ethanol/corn/soybean market.

Other concerns were related to absentee land owners and “corporate agriculture.” One district noted that farmers wanted to be good stewards, but lacked support from organizations. Another stated that farmers needed more financial incentives if they were going to take land out of production.

Minor themes. Wildlife habitat loss was noted as a consequence related to the major concerns discussed previously, including the loss of CRP land and impaired streams. One district noted that CRP is a monoculture itself, and does not support the diversity necessary for wildlife habitat.

Attitudes towards policy and agencies were ambiguous, and were not prevalent enough to establish major themes. At one end of the spectrum, there was the feeling that there is not enough money dedicated to these programs. At the other end of the spectrum, one district expressed “concern over the type of regulations regarding conservation which will result in higher costs of production and even narrower margins.”

Concern over public perceptions was a minor theme, but the views captured were much more uniform in nature than the other themes:

Misconception: hypoxia zone in New Orleans [is] caused by farm chemicals. What about industry and city contaminants [?] Ag takes brunt of comments. Non-ag has its problems—lawns, parking lots, ect. Runoff, antibiotics in sewer system.

The news drives a lot of perception. We don’t see near the editorials about some of the issues that the metro areas do.

Farmers are on the defense...farmers will take care of the land because they have to; it is their living. Economics is the driver. Perception...the bad is always brought to the forefront...not what the good farmers are doing.

Personal Involvement in Improving Water Quality and Supporting Other Conservation Efforts in the Watershed

The ways in which respondents are working to improve water quality and support conservation efforts in their watershed were broken into three broad categories, depicted in Figure 19.
About half (53%) of the districts addressing this topic listed practices related directly to agriculture and production, while 21% indicated participation in a watershed group, and 15% specified personal action that was not directly related to agricultural production. (As noted in a previous topic, the percentages for each category do not add up to 100% since some districts did not address this question within the context of the larger topic).

*Agriculture-related activities that contribute to improved watershed conservation efforts.* Some of the practices listed here include:

- The use of biofilters to reduce nitrates going downstream;
- Serving on boards of Soil and Water Conservation Districts, Farm Bureau, Extension Council, Pheasants Forever, Ducks Unlimited;
- Participation in NRCS, SWCD, CSP programs;
- Terracing, contouring, tiling, no-till, strip till, and impoundment structures;
- Testing run-off;
- Side-dressing nitrogen;
- Using filter strips, buffer strips, riparian buffers;
- Managing manure;
- Reducing tillage;
- Developing more county wildlife areas and wildflower plantings in ditches;
- Creating and supporting conservation legislation;
- Working with ISU and other land grants to test and implement new practices; and
- Leaving crop residue in fields.

*Participation in watershed programs.* Involvement with watershed programs included everything from leadership and organization, to participating in studies, to just being “involved.”

*Personal action related to conservation that is not directly related to production.* Most of the activities that were grouped into this category had to do with youth education, advocacy (through personal relationships and newspaper articles), and planting native prairie.
The Role of ISU Extension in Helping Improve the Effectiveness of Community Conservation Efforts

When asked to define the role of ISU Extension in facilitating community conservation efforts, the responses were easily categorized into the three major goals of Extension: Education, research, and outreach (see Figure 20 for a breakdown). Over half (58%) of the responding districts identified some form of education that would be useful for their communities, and just under a third (32%) called for additional research. While outreach was also highlighted in the responses (26%), it is important to note that the emphasis was placed on outreach beyond the agricultural community. Financial assistance for conservation efforts was also a minor theme in the responses (6%).

Figure 20. Suggestions for ISU Extension to Improve the Effectiveness of Community Conservation Efforts

![Bar chart showing percentages of districts mentioning different needs.]

**Education.** In this context, respondents gave some general answers related to envisioning the future, educating people about conservation issues, and promoting conservation programs offered through NRCS and other agencies. However, there were also specific suggestions:

- Develop stewardship education for out-of-state and absentee landowners;
- Facilitate community dialogue addressing the issue of conservation;
- Continue education about the effective use of nitrogen and other farm chemicals;
- Develop a volunteer program to educate people about conservation efforts;
- Make people aware of cost share programs and how to do paperwork;
- Develop research that can be shared with high school students;
- “Provide government program overview sessions for new land owners and personas not active daily in agriculture. Many hobby farmers do not understand the programs and why they should be concerned about them or want to participate”;
- Provide information and workshops that will convince farmers to “step up land practices far beyond their current efforts”;
- Facilitate local field days about conservation, relating practices to fuel savings and other benefits;
- Give demonstrations on tile line biofilters;
• Provide trainings on how to “do less tillage and still have high yields,” and make presentations to service clubs;
• Focus programming around things individuals can do;
• Focus on the next generation—capitalize on excitement of youth, help find ways to get them into farming with limited capital, and help keep them farming: A young cattle and forage producer asked, “How long can I follow conservation rules and compete with the producers who rent large amounts of ground and farm fence row to fence row”?
• Work on parents’ practices through the education of the children, emphasizing recycling an environmental education.

Research. There was a diverse range of suggestions with regard to research. Participants indicated a desire for continued research (and demonstration) in the following areas:

• Cost effective conservation measures for fragile soils;
• Tillage practices;
• Effectiveness of buffer strips, watershed management, water quality assessment, green construction techniques, urban-rural interface, and water trail development;
• Livestock farm profitability; and
• Soil erosion and loss of fertility.

Some suggestions for new research included:

• Developing socio-economic models to analyze the effects of poor land use decisions;
• Studying methods of farming and grazing on fragile land in a way that allows for compatible uses—growing crops, feed, livestock, and wildlife;
• Developing stable forms of fertilizer and pesticides;
• Looking at ways to make drainage methods less likely to leach farm fertilizers and pesticides;
• Investigating the use of low yielding areas for growing biomass for ethanol;
• Addressing the issues of a major reduction in upland bird numbers;
• Looking at the effects of ethanol plants and the lowering of water tables due to high ground water usage;
• Investigating the possibility, effectiveness, and efficiency of growing other crops for use in ethanol; and
• Researching the impact of large trucks and equipment on soil compaction.

Other suggestions discussed in relation to Extension research included:

• The need for having more on-farm trials on local farms;
• Creating a balance in research with regard to environmental issues; and
• Ensuring that Extension needs to be “the unbiased, neutral third party” if conservation efforts are going to be successful.

Outreach to people outside of the agricultural community. Over a quarter of the districts which chose to address this topic had something to say about the need to reach out to people who were
not involved in agriculture. A major theme was the need to tell “our side” of the story (referenced by five Extension districts), and many of the respondents expressed the opinion that Extension should play a role in changing public perceptions of farming and conservation, while engaging in these issues with “consumers” and people from urban areas:

*Develop public education programs on the connection between commodity production and the food on people’s tables as well as commodity prices in relationship to food and fuel.*

Some districts spoke specifically about relationships between urban and rural populations, while others stressed the need for Extension to address issues of conservation with urban populations.

Another theme within this question was the need to educate producers so that they can represent themselves well to the public:

*Help me or show me how to address the public to understand teaching opportunities, and to understand what the general public values so agricultures can relate to those values. Eliminate the contention of battling the public emotion with facts. How do we translate facts into values the public holds?*

One district emphasized the need for Extension to “provide correct/unbiased information,” suggesting that differences of opinion and contradictory research makes the information confusing to the public.

*Financial assistance.* The main thrust of the conversation with relation to financial assistance had to do with the lack of federal funding. Some participants expressed the viewpoint that Extension should help connect producers to federal funds available for conservation.

**V. CONCLUSIONS**

The appearance of the bioeconomy on the economic, social, and political landscape has brought varying changes to Iowa’s communities, some of which have been well received, while others have not. As a result, bringing up the topic of the bioeconomy in a crowd of Iowans is likely to elicit a range of passionate responses. However, the same is also true for those close to the industry who participated in the Extension-sponsored Community Conversations, including farmers, those in the agriculture-related private sector, representatives of financial institutions, conservationists, educators, elected officials, civil servants, and economic development professionals. This group of stakeholders is enthusiastic about the opportunities the bioeconomy offers but is also concerned about the challenges the industry faces. Questions posed and answered as part of these conversations provide us with insights into the specific nature of the benefits and costs as energy, food, and issues of agriculture merge inextricably over time. The value of these conversations is what they teach us about *who bear which costs and who enjoy which benefits* and how these lessons can be used to inform Extension programming into the future.
Supporting Farming

Crop farmers report they are seeing new economic opportunity in terms of the emergence of new grain markets and higher prices. On the other hand, they are also facing increased financial risk and volatility in the markets. In addition, land prices, rent, and input costs are offsetting some of the economic gains they have enjoyed. The recent bankruptcy of Vera Sun was the centerpiece of discussions on risk and instability. The benefits to livestock producers come in the form of having easy access to another feed source; however, stakeholders say co-product quality issues are a source of instability for livestock growers as are high feed prices, some of whom are going out of business as a result. The increased prices of grain, which are a boon to grain producers, are proving to be catastrophic for some livestock producers. Yet grain farmers face catastrophe as well, much of which is tied to the success and profitability of the biofuels industry. Those who had contracts with Vera Sun are feeling the pinch as they try to find new markets for grain at prices they can reinvest back into their operations. Stakeholders see ethanol plant profitability and efficiency locally, nationally, and internationally as key to their own economic survival. A decrease in credit available to ethanol plants is a threat to industry profitability and, ultimately, the profit margins of grain farmers.

In order to sustain the state’s leadership position in both crop and livestock production, stakeholders say that diversification in agriculture is needed to reduce systemic risk. According to stakeholders, diversification in agriculture should be buoyed by public promotional and educational campaigns to counteract harmful misinformation about the industry and its relationship to food and energy prices. These same stakeholders believe that public misconceptions about the “true cost affecting the price of food” exist, and that these misconceptions persist as serious barrier that could undermine Iowa’s leadership position in agriculture.

Supporting Conservation

Public relations challenges aside, stakeholders report that Iowa's landscape is changing as a result of the bioeconomy. Most districts reported that the industry is driving up corn prices, which affects crops farmers choose to plant. Stakeholders say farmers are taking land out of conservation and are planting it with corn. They are also planting more corn on corn in the rotation cycle to maximize profitability. In addition, farmers may also be converting pastureland to row crop production and increasing tillage. These observations are somewhat contentious, however, given there is conflicting evidence from stakeholders about the bioeconomy's influence on such practices. The majority of districts addressing this topic claim that on-farm conservation practices are declining while half that proportion say conservation is actually on the rise. As in all things, the bioeconomy is likely having a differential impact on different farmers. While some may be stepping up on-farm conservation practices, others may not be. Extension can play a role in researching these differential impacts and using that information to build outreach programs that mitigate the detrimental environmental effects the bioeconomy might be having on farming landscapes.
Supporting Food Self Sufficiency

In addition to farmers, families, as consumers of farm and energy products, are important to consider in the context of changing economies. Participants in the community conversations offered a variety of responses to the question on what role Extension can serve in helping consumers better understand and manage household food costs. The majority of districts suggested that Extension focus on enhancing home economic skills of consumers as it pertains to food, especially food buying decisions, preparing food from scratch, and teaching food preservation techniques. Stakeholders also said Extension should take the lead in conducting research and education on market and other forces influencing food prices, with a special eye toward powerful grocery and oil company lobbies. Again, stakeholders see Extension as a leader in using research-based information to set the public straight, thereby moving public dialogue closer to the realm of the truth. Another possible role Extension can play is greater support for local food self sufficiency. This is supported by a vast majority of districts noting an increase in support for local food in their communities based on what they see on store shelves, at farmer's markets, in their schools, and more widespread organizational participation in the local foods movement. Food safety concerns, rising fuel costs, and concern for human health and the environment may be factors contributing to this increased support. While there is general agreement among stakeholders that higher prices are prompting people to frequent more economical grocery stores and/or choose less expensive store brands over name brands, the data show there is substantial disagreement about how this might be impacting the quality of food they buy. Some say they are eating healthier staples as a result of high food and energy prices while others say they (and others) are choosing more affordable, less nutritionally dense food to consume.

Supporting Vulnerable Families

How are families and communities coping with higher living costs? Nearly every district discussing this topic said households are reducing their food costs one way or another. Families are also employing strategies to reduce household and transportation fuel costs. Stricter and leaner household spending was another strategy families are employing to cope with the rising food and energy prices. Stakeholders acknowledge that families most vulnerable to the rising cost of living are low and fixed income families. However, communities may be making an extra effort to support these families by increasing charitable giving in terms of time and money, despite efforts to reduce household spending. Some stakeholders suggest the time is ripe for Extension to connect with assistance providers to provide another layer of support to these families.

While rising energy costs affect, in a broad way, Iowa’s economy, they also have direct and personal impacts on the economic well-being of families. In the discussion on renewable energy, participants identified factors contributing to rising energy costs— including international demand and market speculation. However, most of the factors discussed were well beyond the control of individuals or even communities, so participants also addressed issues of energy conservation and efficient energy design. They expressed a need for public education about energy conservation and research on efficient energy design for new buildings. As a renewable energy source, wind was the most frequent response— both as a “short-term” solution and for
personal use. And while participants also saw biofuels as a potential option for meeting “short-
term” energy demand for their own use, they were more interested in solar power and geothermal
energy. Extension is well poised to provide the support they will need in realizing that future.

**Supporting the Land**

The concerns that arose in discussions about soil quality, water quality, and wildlife habitat were
varied and covered a wide range of topics. However, the greatest concerns were for water quality
and quantity, soil degradation (mostly in regard to erosion), and poor land stewardship, indicated
by practices that encourage profit and production goals to prevail at the expense of land
resources, water quality, and wildlife habitat. Some stakeholders are already doing their part to
ameliorate the negative effects of land use on the environment. These individuals are working to
improve water quality and other conservation efforts in their watersheds by implementing
agricultural production methods on working lands. Three of the many examples stakeholders
provided include reduced tillage practices, developing more county wildlife areas and wildflower
plantings in ditches, and working with ISU and other land grant universities to test and
implement new practices.

In addition to implications we've already drawn from the data, stakeholders were explicitly asked
to define the role of ISU Extension in facilitating community conservation efforts. Responses
were easily fit into the mission of Extension: In terms of education, stakeholders suggested
Extension educate people about conservation issues, and promote conservation programs offered
through the Natural Resources Conservation Service and other agencies. With regard to
research, participants indicated a desire for continued research spanning the range from
economic feasibility of conservation practices to agricultural water use. As far as outreach was
concerned, stakeholders suggested the need to connect with people who are not involved in
agriculture, demonstrating the wisdom of the farming community in reaching out to bridge
differences for the benefit of anyone who consumes food and energy.
VI. APPENDIX 1. Conversation Discussion Questions

ISU Extension Bioeconomy Task Force
Community Conversation II: Feed, Food, and Fuel Discussion Questions

Topic I. Food and Fuel: Enough Grain but Not Enough Processing
1. How has the emergence of the bioeconomy brought change to your community?
2. What are the greatest challenges facing the biofuels industry in Iowa?
3. What must be done to maintain Iowa’s leadership role in other agricultural industries beyond biofuels (i.e., red meat, eggs, grain processing)?

Topic II. Iowa’s position in global agriculture and bioenergy
1. How have cropping patterns changed in your area over the past two years?
2. How have conservation efforts changed in your area over the past two years?
3. Low are higher feed costs affecting the livestock industry in your area?

Topic III. Factors that determine the cost of food
1. What should ISU Extension do to help consumers understand and manage their food expenditures?
2. As energy and food prices increase, have you noticed stronger support for local foods in your community?
3. How have higher energy and commodity prices affected your food choices? Are you eating more meals at home?

Topic IV. Rising energy and food prices: Effects on families
1. What adjustments are families making due to the rising cost of living?
2. Which families in your community are most affected by the rising cost of living?
3. How are communities responding to the growing gap between the “haves” and the “have nots”?

Topic V. Renewable energy’s place in the high energy cost picture
1. What do you think are some of the factors driving up energy prices?
2. What renewable energy sources have the potential to supplement the overall energy supply in the short term (within 5 years)?
3. What renewable energy sources would you like to employ directly in your home or business?

Topic VI. From vulnerability to resiliency: Iowa agriculture in the age of biorenewables
1. What concerns do you hear or observe in your community about agriculture’s impact on the quality of soil, water, and wildlife habitat?
2. How are you involved in improving water quality and supporting other conservation efforts in your watershed?
3. What can ISU Extension do to help you improve the effectiveness of your community’s conservation efforts?
VII. APPENDIX 2. Participant Observation Data Summary

Note takers were asked to record "participant observations" regarding what they or facilitators observed during the Community Conversation. We requested this information for two reasons: To give districts a chance to reflect on the process and to provide the data analysts and Extension a better picture of the dynamics of each community conversation. We used the participant observation notes to better interpret the content and flavor of each conversation. In the future, these notes can be used to make structural and process improvements to the next round of community conversations. Key data points included the level of participant engagement, key people whose perspectives were missing, and dominant or quiet voices. Additionally, some districts offered comments regarding the webcasts.

Dominant and quiet voices. With some exceptions, the majority of districts reported equitable participant engagement. According to one district, “Everyone took time to speak to the issues and no one dominated the issue.” In the case of the exceptions, dominant personalities were kept in check and did not detract from the quality of the conversation. “Some people were more dominant in the conversation, but everyone had a chance to speak at one time or another.” A second district reported, “We had one dominant voice, but the group compensated.”

Level of participant engagement. Districts offering comments pertaining to participant observation unanimously reported a high level of participant engagement, discourse, and genuine interest in the topics. “Participants were engaged in choosing the topics and discussing the questions.” “This group was a high energy group! Lots of conversation and discussion. It was quite recharging for everyone!” “People remained open minded and asked clarifying questions of each other throughout the conversation.”

Missing key perspectives. Some districts noted a few missing perspectives. For example, several districts adamantly mentioned the absence of farmers from the conversations. In some, harvest took precedence over attendance. “Grain farmers were not at the meeting because the weather was good and they were busy harvesting.” Other categories of missing key representatives included people from agricultural business and city and state government.

Webcasts. For the most part, participants enjoyed watching the videos and learned from them. “They felt the narration was excellent background information and they gained new insights from the introduction video,” reported one district. Some inquired as to how they might be able to access them again in the future or use them for other applications. “Individuals were interested in showing the 12-15 minute sessions at civic group meeting are the session available to the general public on line?” While the majority of the comments about the videos were favorable, a few were not. Some reports indicated the viewing time was too long. “The videos should have been shorter and to the point--we spent too much time watching them.” One district stated that participants thought the videos were leading. “I think the group felt a little led by the videos.”
VIII. APPENDIX 3. Reported Conservation Effort Change and Biofuel Plants in Iowa