Supplementary Information File

Appendix A: Survey Mailing and Returns

The 2011 Bioenergy Crop Production Study targeted active farm landowners in southwestern Wisconsin who raised grain crops, forage, or livestock during the 2010 growing season. These farms manage the majority of cultivable land in this area of the state, and are thus the most important in terms of understanding the impact that introduction of bioenergy markets may have at a landscape scale. This approach leaves out some active farmers who exclusively raise vegetables, fruit crops, or other products but there are relatively fewer of them and they tend to operate farms that are smaller in size. Thus, their land management decisions affect only a small portion of the overall landscape and are not expected to influence bioenergy outcomes at a larger scale.

The final mailing list included a total of 1,543 prospective farmers in Iowa, La Crosse, Richland and Sauk Counties. Within each county, the specific townships selected for inclusion in the study are:
- **Iowa County**: Brigham, Dodgeville, Highland, Linden, Mifflin, Ridgeway
- **La Crosse County**: Bangor, Barre, Burns, Farmington, Greenfield, Hamilton, Washington
- **Richland County**: Dayton, Eagle, Henrietta, Marshall, Rockbridge, Westford
- **Sauk County**: Bear Creek, Fairfield, Franklin, Greenfield, LaValle, Troy, Winfield, Woodland

<table>
<thead>
<tr>
<th>County</th>
<th>Farm population (all townships)</th>
<th>Farm population (selected townships)(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-CRP</td>
<td>CRP</td>
</tr>
<tr>
<td>Iowa</td>
<td>886</td>
<td>927</td>
</tr>
<tr>
<td>La Crosse</td>
<td>593</td>
<td>252</td>
</tr>
<tr>
<td>Richland</td>
<td>989</td>
<td>556</td>
</tr>
<tr>
<td>Sauk</td>
<td>1419</td>
<td>504</td>
</tr>
<tr>
<td>Total</td>
<td>3887</td>
<td>2239</td>
</tr>
</tbody>
</table>

\(^a/\) Source: 2007 Census of Agriculture.

<table>
<thead>
<tr>
<th>County</th>
<th>Mailing summary</th>
<th>Gross returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Random</td>
<td>CRP</td>
</tr>
<tr>
<td>Iowa</td>
<td>298</td>
<td>150</td>
</tr>
<tr>
<td>La Crosse</td>
<td>126</td>
<td>123</td>
</tr>
<tr>
<td>Richland</td>
<td>287</td>
<td>110</td>
</tr>
<tr>
<td>Sauk</td>
<td>322</td>
<td>127</td>
</tr>
<tr>
<td>All</td>
<td>1,033</td>
<td>510</td>
</tr>
</tbody>
</table>
### Table A3. Returns summary

<table>
<thead>
<tr>
<th>County</th>
<th>Ineligible&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Not farming</th>
<th>Refusal&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Useable returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Random</td>
</tr>
<tr>
<td>Iowa</td>
<td>31</td>
<td>62</td>
<td>37</td>
<td>75</td>
</tr>
<tr>
<td>La Crosse</td>
<td>26</td>
<td>47</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>Richland</td>
<td>19</td>
<td>81</td>
<td>29</td>
<td>51</td>
</tr>
<tr>
<td>Sauk</td>
<td>22</td>
<td>70</td>
<td>40</td>
<td>62</td>
</tr>
<tr>
<td>All</td>
<td>98</td>
<td>260</td>
<td>121</td>
<td>216</td>
</tr>
</tbody>
</table>

<sup>a</sup> Farm did not raise row crops, forage or livestock in 2010.

<sup>b</sup> Declined to participate or returned a blank questionnaire.

### Table A4. Returns summary by price scenario (all returns)

<table>
<thead>
<tr>
<th>County</th>
<th>Random sample</th>
<th>CRP sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Iowa</td>
<td>50</td>
<td>47</td>
</tr>
<tr>
<td>La Crosse</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>Richland</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>Sauk</td>
<td>48</td>
<td>53</td>
</tr>
<tr>
<td>All</td>
<td>158</td>
<td>168</td>
</tr>
</tbody>
</table>

### Table A5. Returns summary by price scenario (useable returns)

<table>
<thead>
<tr>
<th>County</th>
<th>Random sample</th>
<th>CRP sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Iowa</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>La Crosse</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Richland</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Sauk</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>All</td>
<td>75</td>
<td>77</td>
</tr>
</tbody>
</table>
## Appendix B: Regression Results

Table B1. OLS regression results for farmer willingness-to-grow bioenergy crops

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corn stover</td>
<td>Switchgrass</td>
<td>Hybrid poplar</td>
</tr>
<tr>
<td>Crop farm</td>
<td>-15.01</td>
<td>16.61</td>
<td>-16.16</td>
</tr>
<tr>
<td>Dairy farm</td>
<td>6.23</td>
<td>58.16</td>
<td>-2.19</td>
</tr>
<tr>
<td>Lrg. livestock farm</td>
<td>22.34</td>
<td>37.05</td>
<td>-13.73</td>
</tr>
<tr>
<td>ln(Price)</td>
<td>8.26</td>
<td>20.71</td>
<td>3.78</td>
</tr>
<tr>
<td>ln(Price) x Crop farm</td>
<td>4.49</td>
<td>-3.20</td>
<td>4.74</td>
</tr>
<tr>
<td>ln(Price) x Dairy farm</td>
<td>-0.63</td>
<td>-14.64</td>
<td>0.81</td>
</tr>
<tr>
<td>ln(Price) x Lrg. livestock farm</td>
<td>-6.07</td>
<td>-7.79</td>
<td>4.07</td>
</tr>
<tr>
<td>Survey version (low)</td>
<td>-1.83</td>
<td>-5.46</td>
<td>-5.97</td>
</tr>
<tr>
<td>Survey version (high)</td>
<td>3.48</td>
<td>6.05</td>
<td>4.05</td>
</tr>
<tr>
<td>Establishment subsidy</td>
<td>9.81</td>
<td>14.80</td>
<td></td>
</tr>
<tr>
<td>ln(Price) x Establishment sub.</td>
<td>-1.80</td>
<td>-2.75</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-24.83</td>
<td>-72.77</td>
<td>-7.97</td>
</tr>
</tbody>
</table>

| Observations | 36 | 48 | 48 |
| R-squared | 0.94 | 0.97 | 0.98 |

a/ Dependent variable: Proportion of farms enrolled in bioenergy program.
b/ Absolute value of t-statistics in parentheses (* = significant at 5%; ** = significant at 1%).
c/ Reference farm type: Small livestock farm.
Appendix C:

Study Questionnaire
Bioenergy Crop Production:

A survey of your opinions

Please return your completed questionnaire in the enclosed envelope

Before you begin, let us answer some questions you might have:

What is the purpose of this survey?
This survey explores farmers’ willingness to produce and sell bioenergy feedstocks in local markets. For example, such feedstocks may include annual crop residues, perennial grasses, and short-rotation woody crops.

Who should fill out this survey?
This survey should be completed by the lead operator of this farm business—the person who makes most of the important day-to-day management decisions. If responsibilities are shared, anyone with senior management authority may complete this survey.

Who is conducting this survey?
This survey is being conducted by researchers in the College of Agricultural and Life Sciences (CALS) at the University of Wisconsin-Madison. The interdisciplinary research team includes agronomists, agricultural economists, and soil scientists.

How will you use the responses?
Responses to this survey will be useful for guiding research choices at the University of Wisconsin and for public discussions related to bioenergy development. A summary of the findings may also appear in various printed formats, such as in newspapers, bulletins or journals.
Participation and Confidentiality

Your farm was selected to receive this survey based on a random sample of agricultural producers in southwestern Wisconsin. It is one of a small group of farms that is being asked to express their opinion about bioenergy crop production. Your participation in this survey is voluntary. However, in order for the results to truly reflect the opinions of all farmers in your area, it is important that each questionnaire be completed and returned.

Please note that your responses will remain completely confidential and your privacy will be protected to the maximum extent allowable by law. The survey mailing is being conducted by the Wisconsin Agricultural Statistics Service (WASS). They will not provide us researchers with your name or other identifying information. The identification number printed on the survey is for mailing purposes only, so WASS will know if you have replied and can remove you from future mailings. Again, your identity and individual viewpoints will remain completely confidential.

If you have questions about this survey, please contact staff at the Program on Agricultural Technology Studies (PATS), University of Wisconsin-Madison, Taylor Hall, 427 Lorch Street, Room 202, Madison, WI 53706, (608) 265-2908.

Please Sign Here:

Consent Statement

I have read the above comments and agree to participate in this survey. I give my permission for WASS to share my responses with the University of Wisconsin, under the confidentiality terms outlined above. I understand that if I have any questions or concerns regarding this project I can contact PATS staff at: (608) 265-2908.

(Participant’s signature)                                 (date)
Section A: Your Farming Operation

A1. Are you currently associated with a farm operation in Wisconsin? (check one)

☐ Yes
☐ No  If not, please do not complete this survey. You may return it in the envelope provided.

A2. Which of the following activities are pursued on your farm? (check all that apply)

☐ Field crops (e.g., corn, soybean)  ☐ Livestock (e.g., beef, horses, sheep, goats)
☐ Forage (e.g. alfalfa, grass hay, pasture)  ☐ Dairy
☐ None of the above  If none, please do not complete this survey. You may return it to us in the envelope provided.

Definitions

Please use the following definitions when responding to questions in this survey:

- **Field crop acres** – Land planted to corn or soybean; occasionally in short rotation with other crops.
- **Rotation/mixed crop acres** – Land planted in crop rotations of three or more years and including alfalfa or grass hay.
- **Permanent pasture** – Land generally used for pasture and grazing.

A3. Describe your land use in 2010 by reporting the number of acres you had in each category:

<table>
<thead>
<tr>
<th>Category</th>
<th>Acres owned</th>
<th>Acres rented in</th>
<th>Acres rented out</th>
<th>Acres operated</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Field crop acres (see above definition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Rotation/mixed crops (see above definition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Permanent pasture (see above definition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Conservation easements, including CRP land</td>
<td>Conservation Reserve Program (CRP)</td>
<td>Other conservation easements</td>
<td>Acres owned:</td>
<td>Acres owned:</td>
</tr>
<tr>
<td>e. Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Non-agricultural land (buildings, roads, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Field Crop Acres

If you operated field crop acres in 2010 (i.e., land planted to corn or soybeans, occasionally in short rotation with other crops) please continue with the questions below; otherwise skip to the top of Page 3.

A4. In 2010, how many of your field crop acres did you harvest to corn, soybeans, or other crops?
   Corn grain: _______ acres  Corn silage: _______ acres  If no acres were harvested, please enter a “0”
   Soybeans: _______ acres  Other crops: _______ acres

A5. In 2010, what were your average yields on these field crop acres?
   Corn grain: ______ bushels/acre  Corn silage: ______ tons/acre
   Soybeans: ______ bushels/acre  Other crops: ______ tons/acre

A6. Which of the following marginal land characteristics are present on your field crop acres, and approximately how many acres are affected? (check all that apply; some acres may have multiple characteristics)
   □ Poor drainage; Acres?______
   □ Shallow to bedrock/water table Acres?______
   □ Seasonal flooding; Acres?______
   □ Other (specify): Acres?______
   □ Excessive stoniness; Acres?______
   □ None If none, skip to Question A8.

A7. In total, about how many of your field crop acres are impacted by one or more of those land characteristics you listed in Question A6? _______ acres

A8. Approximately how many of your field crop acres have a slope of 6% or higher? (i.e., slope class of ‘C’ or greater from a soil survey) _______ acres

A9. What tillage method did you use most often on your field crop acres in 2010? (check one)
   □ Conventional tillage (e.g., chisel, moldboard)
   □ No-till
   □ Reduced tillage (e.g., strip till, zone till)
   □ Other (specify): ________________

A10. Please describe the main crop rotation that you follow on your field crop acres. If you follow more than one, just tell us about the one that covers the most acres. Please distinguish between corn for grain and corn for silage. (Fill in the spaces provided with the name of the crop that appears in each year of the rotation. Leave remaining spaces blank. You do not have to fill all 4 years.)

Example field crop rotation
   Crop name:
   Year 1: Corn
   Year 2: Corn Silage
   Year 3: Soybean
   Year 4: ________________
   This box shows an example 3-year rotation. Notice that “Year 4” is left blank.
   Rotation #1:
   Crop name:
   Year 1: ________________
   Year 2: ________________
   Year 3: ________________
   Year 4: ________________
Rotation/Mixed Crop Acres

If you operated rotation/mixed crop acres in 2010 (i.e., land planted in rotations of three or more years and including alfalfa or grass hay) please continue with the questions below; otherwise skip to the text box entitled “Permanen Pasture” on Page 4.

A11. In 2010, how many of your rotation/mixed crop acres did you harvest to each of the following?
   - Alfalfa or grass hay: ______ acres
   - Exclusive grazing: ______ acres
   - Alfalfa silage: ______ acres
   - Mixed grazing/hay: ______ acres
   - If no acres were harvested, please enter a “0”

A12. In 2010, how many cuttings did you typically make for each of these forage crops?
   - Alfalfa hay: ______ cuttings
   - Alfalfa silage: ______ cuttings
   - Grass hay: ______ cuttings

A13. In 2010, what were your average yields for these crops on your rotation/mixed crop acres?
   - Alfalfa hay: _____ tons/acre (or, _____ bales/acre)
   - Grass hay: _____ tons/acre (or, _____ bales/acre)
   - Alfalfa/grass hay mixture: _____ tons/acre (or, _____ bales/acre)
   - Alfalfa silage: _____ tons/acre (or, _____ bales/acre)

A14. In 2010, how many of your rotation/mixed acres did you harvest to corn, soybean or other crops?
   - Corn grain: _____ acres
   - Corn silage: _____ acres
   - Soybeans: _____ acres
   - Other crops: _____ acres
   - If no acres were harvested, please enter a “0”

A15. In 2010, what was your average yield for these crops on your rotation/mixed crop acres?
   - Corn grain: _____ bushels/acre
   - Corn silage: _____ tons/acre
   - Soybeans: _____ bushels/acre
   - Other crops: _____ tons/acre

A16. Which of the following marginal land characteristics are present on your rotation/mixed crop acres, and if present, approximately how many acres are affected? (check all that apply; some acres may have multiple characteristics)
   - Poor drainage; Acres?_____
   - Shallow to bedrock/water table; Acres?_____
   - Seasonal flooding; Acres?_____
   - Other (specify): ______ Acres?_____
   - Excessive stoniness; Acres?_____
   - None If none, skip to Question A18.

A17. In total, about how many of your rotation/mixed crop acres are impacted by one or more of those land characteristics you listed in Question A16? _______ acres

A18. How many of your rotation/mixed crop acres have slopes of 6–11%? (i.e., slope class of ‘C’ from a soil survey) _______ acres

A19. How many of your rotation/mixed crop acres have slopes of 12% or higher? (i.e., slope class of ‘D’ or greater from a soil survey) _______ acres
A20. For the land you rotated into corn or soybeans in 2010, what tillage method did you use most often on the majority of these acres? (check one)

- Conventional tillage (e.g., chisel, moldboard)
- No-till
- Reduced tillage (e.g., strip till, zone till)
- Other (specify): ________________

A21. Please describe the main crop rotations you follow on your rotation/mixed crop acres. If you follow more than one, please just tell us about the two that cover the most acres. Please distinguish between corn for grain and corn for silage. (Fill in the spaces with the crop that appears in each year of the rotation. Leave remaining spaces blank. You do not have to fill all 7 years.)

Example crop rotation

| Year 1: | Corn | Year 1: |
| Year 2: | Corn | Year 2: |
| Year 3: | Small grains | Year 3: |
| Year 4: | Alfalfa | Year 4: |
| Year 5: | Hay | Year 5: |
| Year 6: | Hay | Year 6: |
| Year 7: | ____________ | Year 7: |

Permanent Pasture

If you operated permanent pasture in 2010 please answer the questions below; otherwise skip to Section B on the next page.

A22. In 2010, what was your average paddock size for pasture grazed during the spring growth phase? _____ acres

A23. For a paddock of this size, how long do you typically let livestock graze before you rotate them out during the spring growth phase? (check one)

- Daily
- Weekly
- Never
- Every 2–5 days
- Monthly
- Other (specify): ______________

A24. How many head typically graze a paddock of this size during the spring growth phase?

_______ head

A25. In 2010, did you make any forage cuttings on your pasture acres, and if so, how many?

- No
- Yes
  How many cuttings? _____ When? (check any): □ Spring □ Summer □ Fall

A26. In 2010, did you apply inorganic fertilizer (e.g., urea, ammonium sulfate, anhydrous) on your permanent pasture acres, and if so, how much was applied during the growing season? (check one)

- No
- Yes
  If yes, how much was applied? _________ lbs/acre nitrogen
Introduction:
Recent research has evaluated the feasibility of producing power, electricity, and transportation fuels from agricultural materials like crop residues, forage grasses and woody biomass. The findings suggest that markets for these bioenergy feedstocks may emerge in the near future.

This section describes a **hypothetical** market program for bioenergy feedstocks, and then asks about your willingness to participate in it. Your responses to these questions will remain confidential and be used for research purposes only. They will not be provided to any private parties.

### Program description:
Imagine a program run by a market aggregator such as an agricultural cooperative, private business venture, or non-profit enterprise that would pay you to supply a particular bioenergy feedstock.

The feedstocks this program will purchase are:

1. **Corn stover**
2. **Switchgrass**
3. **Hybrid poplar**

To aid in your decision-making, a brief description of production systems to supply each of these feedstocks is provided on the next page. Typical yields and suggested management practices for each production system are also provided, prior to each set of respective questions.

### Enrollment and compensation:
To enroll, you must enter into a purchasing agreement with the feedstock program for a specified number of acres. You may enroll as few or as many acres as you like, however once your decision is made it cannot be modified until the end of the stated contract period. You may also choose not to enroll in some or all of the feedstock programs.

Except where noted, payments are based on yield. Quantities harvested will be determined on-site using a portable scale and moisture sensor where appropriate. All transportation and storage costs will be paid by the feedstock program. Payments to producers are to be made no later than three weeks following harvest.

While these questions are hypothetical only, please respond as if you were faced with an actual enrollment decision. When weighing the bioenergy feedstock options against your current practices, you may assume the following prices hold: Corn $5.00/bushel; Milk $16.00/cwt.
Bioenergy Feedstock Descriptions

*This information may be helpful when responding to questions that begin on Page 7.*

#1: Corn Stover

Corn stover consists of the non-grain parts of the corn plant (e.g., stalk, leaf, husk, and cob) that are often left in the field following grain harvest. The sale of corn stover in bioenergy feedstock markets may increase farm revenues from grain production. However, this benefit must be weighed against any increase in production costs and/or decrease in soil quality resulting from its removal. When left in the field, stover residues help maintain soil fertility by contributing organic matter and other nutrients. They also protect against wind and water erosion. Some producers, especially those with marginal soils, may wish to limit the amount removed.

#2: Switchgrass

Switchgrass is a native, warm-season perennial grass that can reach 6–8 feet in height. It is known for high biomass production and cellulose content, two characteristics which make it a candidate for ethanol production and heat and electricity generation. Agronomic advantages include hardiness in poor soils, stand longevity, drought and flood tolerance, and ease of management.

Switchgrass may also offer a number of ecological benefits. With a perennial like switchgrass, there is no need to disturb the soil each year for planting. This may reduce soil erosion and nutrient runoff into nearby waterways. The decreased soil disturbance may also reduce the amount of carbon that is released from the soil into the atmosphere, an effect that lowers soil productivity and has been linked to climate change. Finally, un-harvested edges of switchgrass fields may provide habitat for grassland bird species, small mammals and beneficial insects.

#3: Hybrid Poplar

Hybrid poplars are fast-growing trees that are closely related to cottonwoods and aspens. They are grown using management techniques more similar to annual row crops than to traditional forest management practices. For this reason hybrid poplar is often referred to as a short-rotation woody crop rather than a forest or woodlot product.

The price paid for standing trees is called stumpage. This is the amount the landowner will receive from the feedstock program for the right to harvest the stand, and will be expressed as dollars per ton. Hybrid production minimizes soil disturbance and may therefore decrease soil erosion and carbon emissions into the atmosphere. A field of hybrid poplar offers intermediate biodiversity and habitat to only a few wildlife species.
#1: Corn Stover

Purchasing Agreement

The bioenergy feedstock program offers producers in your area an **annual** contract to supply corn stover. Please note that your decision to enroll places no restrictions on your regular grain production or marketing practices. Stover yields will be determined on a dry ton basis, and producers will be responsible for all collection and handling costs until the point of sale at the farm gate.

Yield and Management Practices

Corn stover is a by-product of corn grain production. Its collection typically requires a single pass across the field with traditional forage harvesting equipment (e.g., round or square baler) following the grain harvest. A slight increase in fertilization is often recommended to replace nutrients removed in the harvested residues. To maintain soil fertility and guard against erosion, state guidelines typically recommend no more than 25–35% of total available stover (by mass) be removed. At these removal rates, an acre of land producing 150 bushels of corn grain could be expected to yield 1 dry ton of corn stover.

Please make sure you have read the section entitled “Enrollment and Compensation” on Page 5 before responding to this set of questions.

**B1.** The feedstock program offers you an **annual contract** to supply them with for corn stover. At $60/dry ton, would you enroll any acres in this program? (check one, then follow the appropriate directional arrows)

[ ] Yes  [ ] No

If no, please skip to Question B3 on Page 8.

Specifically, I would enroll . . . .

______ of my existing field crop acres
______ of my existing rotation/mixed crop acres
______ of converted permanent pasture acres
______ of newly rented-in crop acres
______ of my next expiring CRP contract acres
______ other acres (specify):___________

Please enter the number of acres you wish to enroll here.

Do you agree or disagree with the following statements?

a. “At this price, I would adjust the cropping sequence on my field crop acres to include more corn.” (check one)  [ ] Agree  [ ] Disagree

b. “At this price, I would adjust the cropping sequence on my rotation/mixed crop acres to include more corn.” (check one)  [ ] Agree  [ ] Disagree

Please continue with Question B2 on Page 8.
B2. If the price decreased to $50/dry ton and all other contract provisions remain the same, would you still enroll in the corn stover program, albeit with fewer acres? (check one, then follow the appropriate directional arrows)

☐ Yes ☐ No

If yes, please skip to the top of Page 9.

If no, please skip to the top of Page 9.

B3. If the price increased to $75/dry ton and all other contract provisions remain the same, would you now enroll some acres in the corn stover program? (check one; then follow the appropriate directional arrows)

☐ Yes ☐ No

Specifically, I would enroll . . . .

☐ of my existing field crop acres
☐ of my existing rotation/mixed crop acres
☐ of converted permanent pasture acres
☐ of newly rented-in crop acres
☐ of my next expiring CRP contract acres
☐ other acres (specify): ____________

If no, please skip to the top of Page 9.

Do you agree or disagree with the following statements?

a. “At this price, I would adjust the cropping sequence on my field crop acres to include more corn.” (check one) ☐ Agree ☐ Disagree

b. “At this price, I would adjust the cropping sequence on my rotation/mixed crop acres to include more corn.” (check one) ☐ Agree ☐ Disagree

Please continue onto the top of Page 9.
#2: Switchgrass

Purchasing Agreements

The bioenergy feedstock program offers producers in your area a **multi-year contract** (details provided below) to supply switchgrass. Please note that all switchgrass grown on enrolled acres must be sold to the program and may not be used or sold for other purposes. Yields will be determined on a dry ton basis, with producers responsible for all production, harvest, and handling costs until the point of sale at the farm gate. Except where noted, the feedstock prices offered include all production incentives that may be available to producers (e.g., payments from BCAP or other similar programs).

**Yield and Management Practices**

The production of switchgrass is similar to other warm-season grasses (e.g., big bluestem, indian grass). Management operations during the establishment year typically include land preparation, seeding, and weed control. Stands mature in the second or third year of production and are capable of producing high yields for fifteen to twenty years if properly maintained. Annual fertilizer and pesticide recommendations for switchgrass are generally around 20 to 25% of that required for annual row crops.

Switchgrass can be harvested using traditional forage equipment; ideally once in the fall following a frost. After a frost, nutrients move from the above ground biomass into the root system, thus minimizing the need for their replacement. Annual yields for a mature stand range from 3–5 dry tons (a conservative average across soil types). Producers can expect to receive about 20% and 50% of this yield during the first and second year of production, respectively, while the stand is maturing.

B4. **The feedstock program offers you a 5-year contract to supply them with switchgrass. At $75/dry ton, would you enroll any acres in this feedstock program?** (check one, then follow the appropriate directional arrows)

- [ ] Yes
- [ ] No

**Specifically, I would enroll . . . .**
- _______ of my existing field crop acres
- _______ of my existing rotation/mixed crop acres
- _______ of converted permanent pasture acres
- _______ of newly rented-in crop acres
- _______ of my next expiring CRP contract acres
- _______ other acres (specify):_________

![Enter the number of acres you wish to enroll here.](image)

If no, please skip to Question B6 on Page 10.

![e.g., shrubland, fallow pasture, or non-CRP conservation easement acres.](image)

Please continue with Question B5 on Page 10.
B5. If the price decreased to $65/dry ton and all other contract provisions remain the same, would you still enroll in the switchgrass feedstock program, albeit with fewer acres? (check one, then follow the appropriate directional arrows)

- Yes
- No

Do you agree or disagree with the following statement? (check one)

“If I were instead offered a 3-year contract at this lower price, I would still enroll in the feedstock program albeit with fewer acres.”

- Agree
- Disagree

♫ Please skip to the top of Page 11.

B6. If the price increased to $90/dry ton and all other contract provisions remained the same, would you now enroll some acres in the switchgrass feedstock program? (check one, then follow the appropriate directional arrows)

- Yes
- No

Specifically, I would enroll . . . .

- ___ of my existing field crop acres
- ___ of my existing rotation/mixed crop acres
- ___ of converted permanent pasture acres
- ___ of newly rented-in crop acres
- ___ of my next expiring CRP contract acres
- ___ other acres (specify): ___

♫ Enter the number of acres you wish to enroll here.

♫ e.g., shrubland, fallow pasture, or non-CRP conservation easement acres.

♫ Please continue onto the top of Page 11.

Do you agree or disagree with the following statement? (check one)

“If I was instead offered the same 5-year contract at this higher price, plus a one-time payment of $125/acre to help defray establishment costs, I would now enroll some acres in the feedstock program.”

- Agree
- Disagree

♫ Please skip to the top of Page 11.
#3: Hybrid Poplar

Purchasing Agreements

The bioenergy feedstock program offers producers in your area a **multi-year contract** (details provided below) to supply hybrid poplar. Please note that all hybrid poplar grown on enrolled acres must be sold to the program and may not be used or sold for other purposes. Producers are responsible for establishment and annual maintenance costs. Stands will be custom harvested by the feedstock program, and producers will receive a stumpage price based on yield. Except where noted, the feedstock prices offered include all production incentives available to producers (e.g., payments from BCAP or other similar programs).

Yield and Management Practices

Hybrid poplar is propagated by planting cuttings from a parent tree into a previously cleared field. Planting occurs in late winter or early spring. Higher density plantings with 400 to 500 trees per acre (approximately 10' by 10' spacing) are recommended for the bioenergy market. Periodic fertilization and tillage between rows is recommended to control weeds during the first three years of growth; after which trees are tall enough to out-compete other plants. Very few pesticides are needed to control insects and diseases on hybrid poplars, as excellent sources of host resistance are available in most instances.

Harvest generally occurs in years 5 to 10 after planting, in late winter when trees are dormant. When grown under short-rotation culture, stands can produce between 3 and 5 dry tons of wood per acre per year during this period, depending on soil productivity. This compares to yields of less than 1 ton/acre annually for native forests and 2.5 tons/acre annually for managed pine plantations.

**B7.** The feedstock program offers you a **10-year contract** to supply them with hybrid poplar. At **$75/dry ton**, would you enroll any acres in this program? (check one; then follow the appropriate directional arrows)

☐ Yes
☐ No

Specifically, I would enroll . . . .

______ of my existing **field crop** acres
______ of my existing **rotation/mixed crop** acres
______ of converted **permanent pasture** acres
______ of newly **rented-in** crop acres
______ of my next expiring **CRP contract** acres
______ of converted **woodland** acres
______ other acres (specify):___________

[e.g., shrubland, fallow pasture, or non-CRP conservation easement acres.]

Please continue with **Question B8**
on Page 12.

If no, please skip to **Question B9**
on Page 12.
B8. If the price decreased to $65/ton and all other contract provisions remain the same, would you still enroll in the hybrid poplar feedstock program albeit with fewer acres? (check one, then follow the appropriate directional arrows)

☐ Yes  ☐ No

Specifically, I would enroll . . . .

_____ of my existing field crop acres
_____ of my existing rotation/mixed crop acres
_____ of converted permanent pasture acres
_____ of newly rented-in crop acres
_____ of my next expiring CRP contract acres
_____ of converted woodland acres
_____ other acres (specify):

☐ Agree  ☐ Disagree

“If I were instead offered the same 10-year contract at this lower price, plus a one-time payment of $200/acre to help defray establishment costs, I would now enroll some acres in the feedstock program.”

☐ Agree  ☐ Disagree

Please skip to the top of Page 13.

B9. If the feedstock program now offers you the same 10-year contract but increases the hybrid poplar price to $90/ton, would you now enroll some acres in the program? (check one, then follow the appropriate directional arrow)

☐ Yes  ☐ No

Specifically, I would enroll . . . .

_____ of my existing field crop acres
_____ of my existing rotation/mixed crop acres
_____ of converted permanent pasture acres
_____ of newly rented-in crop acres
_____ of my next expiring CRP contract acres
_____ of converted woodland acres
_____ other acres (specify):

☐ Agree  ☐ Disagree

“If I was instead offered the same 10-year contract at this higher price, plus a one-time payment of $200/acre to help defray establishment costs, I would now enroll some acres in the feedstock program.”

☐ Agree  ☐ Disagree

Please continue on to the next page.
Section C: Bioenergy Knowledge and Issues

C1. Prior to this survey, had you heard about these feedstocks used for bioenergy purposes?
   a. Corn stover? (check one)  □ Yes  □ No
   b. Switchgrass? (check one)  □ Yes  □ No
   c. Hybrid poplar? (check one)  □ Yes  □ No

C2. What is your perceived riskiness of participating in the production and marketing of the following activities? (check one for each activity; please respond to each activity even if you have no experience with it)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very risky</th>
<th>Somewhat risky</th>
<th>Only slightly risky</th>
<th>No risk</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Corn grain:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Grass hay:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Corn stover removal:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>d. Switchgrass:</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>e. Hybrid poplar:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. In 2010, did you grow energy crops for a company or other entity? (check one)
   □ No  □ Yes
   If yes, which crops? #1: __________ #2: __________

C4. In 2010, did you use biofuels or other renewable energy sources in your farming operation (e.g., biodiesel, E85 gasoline, manure digester, solar panels, wind turbine)? (check one)
   □ No  □ Yes
   If yes, which ones? #1: __________ #2: __________

C5. The U.S. government has several renewable energy goals. For example, the Renewable Fuel Standard calls for 36 billion gallons of renewable fuels to be produced by 2022. If met, this would replace 7% of our annual transportation fuel consumption. Do you agree or disagree with the following statements? (check one for each statement)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. “The government should do more to promote bioenergy”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. “Meeting our renewable energy goals is key to growing the rural economy”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. “Meeting our renewable energy goals is key to slowing climate change.”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. “Meeting our renewable energy goals is key to reducing our dependence on foreign energy sources.”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. “We will meet the Renewable Fuel Standard by 2022.”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. “The government should allow regular harvesting of CRP lands for bioenergy purposes.”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section D: Tell Us About Your Farming Practices

You are almost finished! Your responses to these remaining questions will allow us to better understand how bioenergy crop production relates to your current practices.

D1. What land management practices did your farm have in place in 2010? (check all that apply)
   - Wildlife management
   - Stream protection
   - Organic production
   - Habitat restoration
   - Integrated pest management
   - Cover crops

D2. What land conservation practices did your farm have in place in 2010? (check all that apply)
   - Contour tillage
   - Buffer strips
   - Grassed waterways
   - Contour strip cropping
   - Terracing
   - Other (specify): _______________

* If you grew corn for grain in 2010, please continue with the questions below; otherwise skip to Question D5 below.

D3. Which statement below best describes your corn harvesting situation? (check one)
   - I harvest corn using my own equipment
   - A neighbor, friend, or relative harvests my corn
   - I custom hire someone to harvest my corn
   - A cooperative harvests my corn
   - Other (specify): _______________

D4. In 2010, what percentage of your corn grain did you market in each of the following ways? (enter percentages in the spaces provided such that they sum to one hundred.)
   - I sold ______ % on the cash market
   - I sold ______ % to a nearby producer
   - I used ______ % on the farm
   - Other ______ % (specify): ___________________

D5. Have you removed corn stover from the field in the last three years? (check one)
   - Yes
   - No

* If you grew hay in 2010 continue with the questions below; otherwise skip to the top of Page 15.

D6. Which statement below best describes your hay harvesting situation? (check one)
   - I harvest hay using my own equipment
   - A neighbor, friend, or relative harvests my hay
   - I custom hire someone to harvest my hay
   - A cooperative harvests my hay
   - Other (specify): _______________

D7. In 2010, what percentage of your hay did you market or use in each of the following ways? (enter the percentages in the spaces provided; your responses should sum to one hundred.)
   - I sold ______ % on the cash market
   - I sold ______ % to a nearby producer
   - I used ______ % on the farm
   - Other ______ % (specify): ___________________
If you owned livestock on January 1, 2010, please continue with the questions below; otherwise skip to Question D11 below.

D8. On January 1, 2010, what types of livestock were you raising, and about how many of each? (enter the number in the space provided; you may leave spaces blank for types you did not raise)

<table>
<thead>
<tr>
<th>Type of livestock</th>
<th>Number of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy Cows:</td>
<td>Total ____________</td>
</tr>
<tr>
<td></td>
<td>Milking: ________</td>
</tr>
<tr>
<td></td>
<td>Heifers: ________</td>
</tr>
<tr>
<td>Beef cattle:</td>
<td></td>
</tr>
<tr>
<td>Sows or Pigs:</td>
<td></td>
</tr>
<tr>
<td>Horses:</td>
<td></td>
</tr>
<tr>
<td>Other: Type #1 (specify): __________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type #2 (specify): __________</td>
</tr>
</tbody>
</table>

D9. In 2010, did you actively follow a nutrient management plan? (check one)

☐ No  ☐ Yes

D10. In 2010, how did you store most of the manure from your livestock? (check one)

☐ Put directly into spreader and/or spread daily  ☐ Leave manure in barn/building
☐ Pile outside on the ground or slab  ☐ Other (specify): ____________________
☐ Place in a storage structure (storage basin, concrete pit, slurry system)

D11. If you do not currently have dairy cows, have you ever had dairy cows? (If you currently have dairy cows you may skip this question)

☐ No  ☐ Yes ☑ If yes, how many years ago? _______

D12. In 2010, did you spread manure on any of the following land types, and if so, when?

a. Field crop acres? ☐ Yes ☑ When? (check any): ☐ Fall  ☐ Winter  ☐ Spring  ☐ Summer  ☐ No

b. Rotation/mixed crop acres? ☐ Yes ☑ When? (check any): ☐ Fall  ☐ Winter  ☐ Spring  ☐ Summer  ☐ No

c. Permanent pasture? ☐ Yes ☑ When? (check any): ☐ Fall  ☐ Winter  ☐ Spring  ☐ Summer  ☐ No

If you owned Conservation Reserve Program (CRP) land in 2010 please continue with the questions below; otherwise skip to Question D19.

D13. How many CRP contracts do you currently have? __________

D14. When is your next CRP contract set to expire and how large is it?

Year of expiration: ________  Size of contract: ________ acres
D15. How would you best describe the vegetation on your next expiring CRP contract? (check one)

- Mostly cool-season grasses (e.g. smooth bromegrass, orchardgrass, other pasture grass)
- Mostly warm-season grasses (e.g. big bluestem, indiangrass, other native prairie grasses)
- A mixture of cool and warm season grasses.
- Other (e.g., trees, wetlands) (specify): _________________

D16. How have you managed the land in your next expiring CRP contract? (check any that apply)

- Occasional grazing
- Occasional burning
- Other (specify): __________
- Occasional haying
- I don’t manage my CRP land

D17. Do you plan to re-enroll your next expiring contract acres with the CRP program? (check one)

- Unsure
- No
- Yes ☑ If yes, please skip to Question D19 below.

D18. What do you plan to do with this CRP land after your current contract expires? (check one)

- Plant it mostly to field crops
- Rent it out for crop production
- Plant it to bioenergy crops
- Plant it mostly to forage crops
- Use it for pasture/grazing
- Other (specify): __________

D19. In general for your farming operation, do you agree or disagree with the following statements:
(check one for each statement)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Somewhat disagree</th>
<th>Strongly disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. “I would accept increased uncertainty in net returns if labor and/or</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>management requirements decrease.”</td>
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<tr>
<td>b. “I would accept increased uncertainty in net returns if local</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>wildlife populations increase.”</td>
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<td></td>
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<tr>
<td>c. “I would accept increased uncertainty in net returns if soil quality</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>on my farm increases.”</td>
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<tr>
<td>d. “I would accept increased uncertainty in net returns if water</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>quality improves in nearby streams/lakes.”</td>
<td></td>
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<tr>
<td>e. “I would accept increased uncertainty in net returns if greenhouse</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>gas emissions decrease.”</td>
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</tr>
</tbody>
</table>

If you owned ten or more acres of contiguous woodlands in 2010 please continue with the questions below; otherwise skip to Question E1 on Page 17.

D20. Which category below best describes most of your woodland acres? (check one)

- Merchantable timber (e.g., high-quality species for sawtimber, veneerlogs, pulpwood)
- Non-merchantable timber (e.g., low-quality species or junk wood)
- Don’t know
D21. How would you best describe your woodland management style? (check one)

☐ I am actively involved in management decisions.  ☐ My woodlands are not actively managed.
☐ I am relying on others to manage my woodlands.

D22. Which of the following are important uses of your woodlands? (check all that apply)

☐ Quiet recreation (e.g., hiking, personal retreat)  ☐ Income from timber harvesting
☐ Motorized recreation (e.g., snowmobile, ATV)  ☐ Real estate investment
☐ Income from non-timber products (e.g., hunting rights, firewood, maple syrup)  ☐ Personal use of non-timber products (e.g., hunting, firewood, mushrooms)
☐ Other (specify): ____________________

D23. Have you ever harvested your woodlands for timber? (check one)

☐ Yes  ☐ No

Section E: Tell Us About Yourself

☞ The questions in this section refer to the primary decision maker for this farm operation.

E1. Where is most of your farm located? County:__________  Township:__________

E2. In what year did you or your family begin farming at this farm? __________

E3. How old are you? _______

E4. What is your gender? (check one)  ☐ Male  ☐ Female

E5. About what share of farm labor is provided by you or your family members? ______% 

E6. Do you work off-farm, and if so, how much?

☐ No  ☐ Yes  ☞ If yes, how many: Hours per week? ______  Weeks per year? ______

E7. What is the highest level of education you have received? (check one)

☐ Less than high school  ☐ Some college or tech school  ☐ 4-year college degree
☐ High school or equivalent  ☐ 2-year college degree  ☐ Master’s or higher

E8. What is the highest level of education your spouse has received? (check one)

☐ Not married  ☐ Less than high school  ☐ Some college or tech school  ☐ 4-year college degree
☐ High school or equivalent  ☐ 2-year college degree  ☐ Master’s or higher

E9. What percentage of your total household income came from farming in 2010? ______% 

E10. Which category below best describes your total household income for 2010? (check one)

☐ Less than $50,000  ☐ $100,000 to $149,000  ☐ $200,000 or above
☐ $50,000 to $99,999  ☐ $150,000 to $199,000
Other Comments:

Thank you for taking the time to complete this survey. We know that you are busy and appreciate your help. If you have any comments that you would like to share with us, please write them here (or on an additional sheet of paper) and include them in the mailing envelope provided.

__________________________________________________________________________
__________________________________________________________________________
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