Antecedents to Biomass Procurement: The Essentials for Producer Participation

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Objectives and Approach

- Expand existing literature on procurement and producer participation in biomass markets
- Capture survey data on producer perceptions of biomass procurement and sales
- Develop multi-item variables describing producer participation in biomass markets
  - Exploratory factor analysis
  - Use in econometric model
- Offer procurement information to those involved in biomass procurement
Survey

- 2,250 surveys sent to Iowa producers farming 50 or more acres
- 885 surveys returned
  - 785 completed
  - 88 partially completed
  - 12 no longer making decisions
- Response rate: 39.3%
Project Regions

1. (168, 37%)

2. (176, 39%)

3. (188, 42%)

4. (147, 33%)

5. (206, 46%)
Framework: Example Control Variables

- **Farmers**
  - 63 years old
  - Active farmers – 88%
  - Farm management company – 1%
  - 50% corn, 36% beans, and 14% other

- **Size**
  - 53% <500 acres
  - 5% >5000 acres

- **Land**
  - 35% HEL
  - 29% No–till
  - 48% Minimum till

- **Marketing**
  - Sold corn to ethanol plant – 49%
  - Sold biomass to biofuel plant – <1%
Framework: Example of Alternative Crops Variables

- **Interest in Selling**

  - Trees: 1.81
  - Legumes: 1.90
  - Grasses: 2.15
  - Corn stover: 2.28
  - Corncobs: 2.23
Framework:
Example of Knowledge/Information Variables

- Knowledge of
  - Corn-based ethanol: 4.4 / 7.0
  - Cellulosic biofuel: 3.0 / 7.0

- Knowledge
  - Alternative crops: 2.08
  - Harvest options: 2.35
  - Removal cost: 2.45
  - Land sustainability: 2.82
  - Nutrient value/loss: 2.73
  - Pricing biomass: 1.87

- Information Sources
  - Internet: 3.14
  - TV or radio: 3.25
  - Newspapers: 3.62
  - Neighbors/friends: 3.51
  - Legal counsel: 2.90
  - Cooperatives: 3.52
  - Federal government: 3.59
  - Crop consultants: 3.20
  - Contracting companies: 3.44
  - Extension: 3.81
Framework: Example of Contract/Relationship Variables

- **Contract Concerns**
  - Contract opt-out clauses: 4.02
  - Acts of God: 3.69
  - Terms of storage: 3.98
  - Contract length: 3.85
  - Land ownership constraints: 3.66
  - Previous experience: 3.29
  - Contract terms: 3.97

- **Likely to Contract**
  - Startup bioenergy firm: 2.26
  - Petroleum company: 1.99
  - Custom harvester: 2.36
  - Large ag. firm: 2.27
  - Local cooperative: 2.64
## Sustainability Concerns

<table>
<thead>
<tr>
<th>Sustainability Concern</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil erosion</td>
<td>4.86</td>
</tr>
<tr>
<td>Residue management</td>
<td>4.43</td>
</tr>
<tr>
<td>Nutrient loss</td>
<td>4.88</td>
</tr>
<tr>
<td>Percent biomass removed</td>
<td>4.49</td>
</tr>
<tr>
<td>Crop rotations</td>
<td>3.94</td>
</tr>
<tr>
<td>Farm program compliance</td>
<td>4.40</td>
</tr>
<tr>
<td>Land use changes</td>
<td>4.09</td>
</tr>
<tr>
<td>Govt commitment to subsidies</td>
<td>4.00</td>
</tr>
</tbody>
</table>
Framework: Example of Capital/Investment Variables

- **Capital/Investment Concerns**
  - Price volatility: 4.33
  - Market viability: 4.44
  - Financing equipment: 3.65
  - Equipment obsolescence: 3.57
  - Willingness to invest in equipment: 3.82
### Framework:
**Example of Harvest/Logistics Variables**

#### Harvest Concerns

<table>
<thead>
<tr>
<th>Concern</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-field transport / compaction</td>
<td>4.13</td>
</tr>
<tr>
<td>Custom biomass harvesters</td>
<td>3.35</td>
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<tr>
<td>Labor availability</td>
<td>3.73</td>
</tr>
<tr>
<td>Dual-pass system</td>
<td>3.37</td>
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<tr>
<td>Single-pass system</td>
<td>3.47</td>
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<tr>
<td>Harvest delays</td>
<td>3.93</td>
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<tr>
<td>Timing of removal from field</td>
<td>3.83</td>
</tr>
<tr>
<td>Short harvest window</td>
<td>3.95</td>
</tr>
<tr>
<td>Fall weather</td>
<td>3.91</td>
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</tbody>
</table>

#### Logistics Concerns

<table>
<thead>
<tr>
<th>Concern</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-farm storage</td>
<td>3.39</td>
</tr>
<tr>
<td>Distance to markets</td>
<td>4.59</td>
</tr>
<tr>
<td>Availability of trucks</td>
<td>3.59</td>
</tr>
<tr>
<td>Infrastructure / truck traffic</td>
<td>3.65</td>
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<tr>
<td>Densification</td>
<td>3.50</td>
</tr>
<tr>
<td>Moisture requirements</td>
<td>3.82</td>
</tr>
</tbody>
</table>
Next Steps

- Conduct statewide and interregional data analysis.
- Develop constructs about producer participation in biomass markets.
- Offer guidelines for the biomass procurement process.
- Develop grant report.
- Publish the results of the study.
Questions?