Perspectives on Perennial Grain Crop Production Differ between Organic and Conventional Farmers in the United States and France

Sandra Wayman, Valentine Debray, Stephen Parry, Christophe David, Matthew R. Ryan

The Sustainable Cropping Systems Lab, Cornell University
Fourth Annual International International Kernza Conference

Submitted to ‘Agroecology and Sustainable Food Systems’
Farmer survey

• France and US are among the top producers of small grains and are leaders in organic food markets

• June 23, 2016 through July 25, 2016

• Objectives
  • Evaluate farmer interest in perennial grains
  • Identify motivations and barriers
  • Explore differences between French vs. US and conventional vs. organic farmers
Survey responses by state and region

88 US farmers

319 French farmers

407 farmers completed the survey
## Farmer demographics

<table>
<thead>
<tr>
<th></th>
<th>Country</th>
<th>Farm Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>France</td>
<td>US</td>
</tr>
<tr>
<td><strong>Total farmers</strong>²</td>
<td>77%</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>(270/351)</td>
<td>(81/351)</td>
</tr>
<tr>
<td><strong>&gt;50% of income from farming</strong></td>
<td>68%</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>(183/268)</td>
<td>(38/79)</td>
</tr>
<tr>
<td><strong>Selected crops produced</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other cereals</strong>³</td>
<td>47%</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>(124/264)</td>
<td>(18/78)</td>
</tr>
<tr>
<td><strong>Other grain crops</strong>⁴</td>
<td>37%</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>(98/264)</td>
<td>(17/78)</td>
</tr>
<tr>
<td><strong>Annual &amp; perennial forages</strong></td>
<td>66%</td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td>(174/264)</td>
<td>(44/78)</td>
</tr>
<tr>
<td><strong>Livestock</strong></td>
<td>40%</td>
<td>49%</td>
</tr>
<tr>
<td></td>
<td>(106/264)</td>
<td>(38/78)</td>
</tr>
<tr>
<td><strong>Previous knowledge of perennial grains</strong></td>
<td>36%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>(96/270)</td>
<td>(55/81)</td>
</tr>
</tbody>
</table>
“What level of interest do you have in growing perennial grains?”

• 57% interested/very interested
• 41% need more information
• 2% not interested/definitely not interested

• Is there an association between interest level and previous knowledge?
  – 73% \((n = 93/128)\) with previous knowledge were interested
  – 47% \((n = 78/165)\) with no previous knowledge were interested
Potential Motivations

Please rank the top 3 reasons why you might be interested in growing perennial grains.
*Type in a number from 1 to 3 in the box to the left (use "1" to indicate the most important reason)*

- To maintain or increase farm profitability
- To reduce input use
- To reduce labor requirements
- To reduce soil erosion
- To improve soil health
- To improve water quality
- To help mitigate climate change
- To diversify crop production
- To provide wildlife habitat
- To grow on sloped or marginal land
- To improve weed management
- To graze or produce forage in addition to grain
- Other, please define:
The proportion of farmers, presented by country (France n = 221, US n = 71) and farm type (Conv., n = 76, Org., n = 216), who selected one of the given possible reasons in their top three motivations for growing perennial grains.
Given the potential challenges associated with perennial grain production, what would be your top 3 concerns?

Type in a number from 1 to 3 in the box to the left (use "1" to indicate the most important reason)

- High cost of seed
- Increased pest problems (weeds, diseases, insects)
- Decreased grain yield over time or limited crop life span
- Low grain yield
- Lack of market where you can sell your crop
- Low profitability
- Low seed availability
- Difficulty harvesting
- Specialized equipment requirements
- Low grain quality
- Other, please define:
The proportion of farmers, presented by country (France n = 221, US n = 71) and farm type (Conv., n = 76, Org., n = 216), who selected one of the given possible concerns in their top three concerns about growing perennial grains.
How do you think a perennial grain could best fit into your farm operation?

*Check all that apply*

- As a long-term perennial crop on your most productive land
- As a long-term perennial crop on sloped or less productive land
- As a short-term perennial crop in standard fields that is grown as part of a multi-year rotation
- As a perimeter crop that serves as a buffer
- Other, please define
- I do not know
The proportion of farmers, presented by country (France n = 226, US n = 73) and farm type (Conv. n = 80, Org. n = 219), who selected a given potential integration strategy.

No difference in choices:
- between French and US respondents
- between conventional and organic respondents
Please indicate whether you agree or disagree with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am interested in dual-purpose perennial crops that can be harvested for both grain and forage.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I would grow perennial grains to provide environmental benefits even if they were not as profitable as other crops.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Research funding should be spent on annual grain crops rather than developing new perennial grain crops.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
The percentage of farmers, presented by country (France n = 221, US n = 70) and farm type (Conv. n = 76, Org. n = 214) who answered “agree”, “neutral” or “disagree” for three statements about perennial grains. Numbers within bar segments indicate counts of respondents.

Results of chi-square tests for country and farm type:

- For country:
  - France: $X^2 = 7.7, P < 0.05$
  - USA: $X^2 = 22.2, P < 0.0001$

- For farm type:
  - Conv.: $X^2 = 7.7, P < 0.05$
  - Org.: $X^2 = 22.2, P < 0.0001$

* Stars between bar segments of the same color represent a significant difference in the proportions.
  * = $p < 0.05$, ** = $p > 0.01$
• 57% of farmers interested in growing perennial grains

• Profitability was a priority for all farmers
  • Reducing labor requirements
  • Improving soil health

• More US vs. French farmers and more organic vs. conventional farmers were interested in perennial grains as a dual-purpose crop for grain and forage

• Conventional farmers motivated by profitability, whereas organic farmers reported they would grow perennial grains to provide environmental benefits
Thank you!

sw783@cornell.edu