

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 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

Responses



15

10

5

319 French farmers

Responses



60

40

20

407 farmers completed the survey

Farmer demographics

	Country		Farm Type	
	France	US	Conventional	Organic
Total farmers²	77% (270/351)	23% (81/351)	25% (88/351)	75% (263/351)
>50% of income from farming	68% (183/268)	48% (38/79)	66% (57/87)	63% (164/260)
Selected crops produced				
Other cereals³	47% (124/264)	23% (18/78)	7% (6/86)	53% (136/256)
Other grain crops⁴	37% (98/264)	22% (17/78)	25% (22/86)	36% (93/256)
Annual & perennial forages	66% (174/264)	56% (44/78)	40% (34/86)	72% (184/256)
Livestock	40% (106/264)	49% (38/78)	23% (20/86)	48% (124/256)
Previous knowledge of perennial grains	36% (96/270)	68% (55/81)	44% (39/88)	43% (112/263)

“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



Cornell University



English 

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)

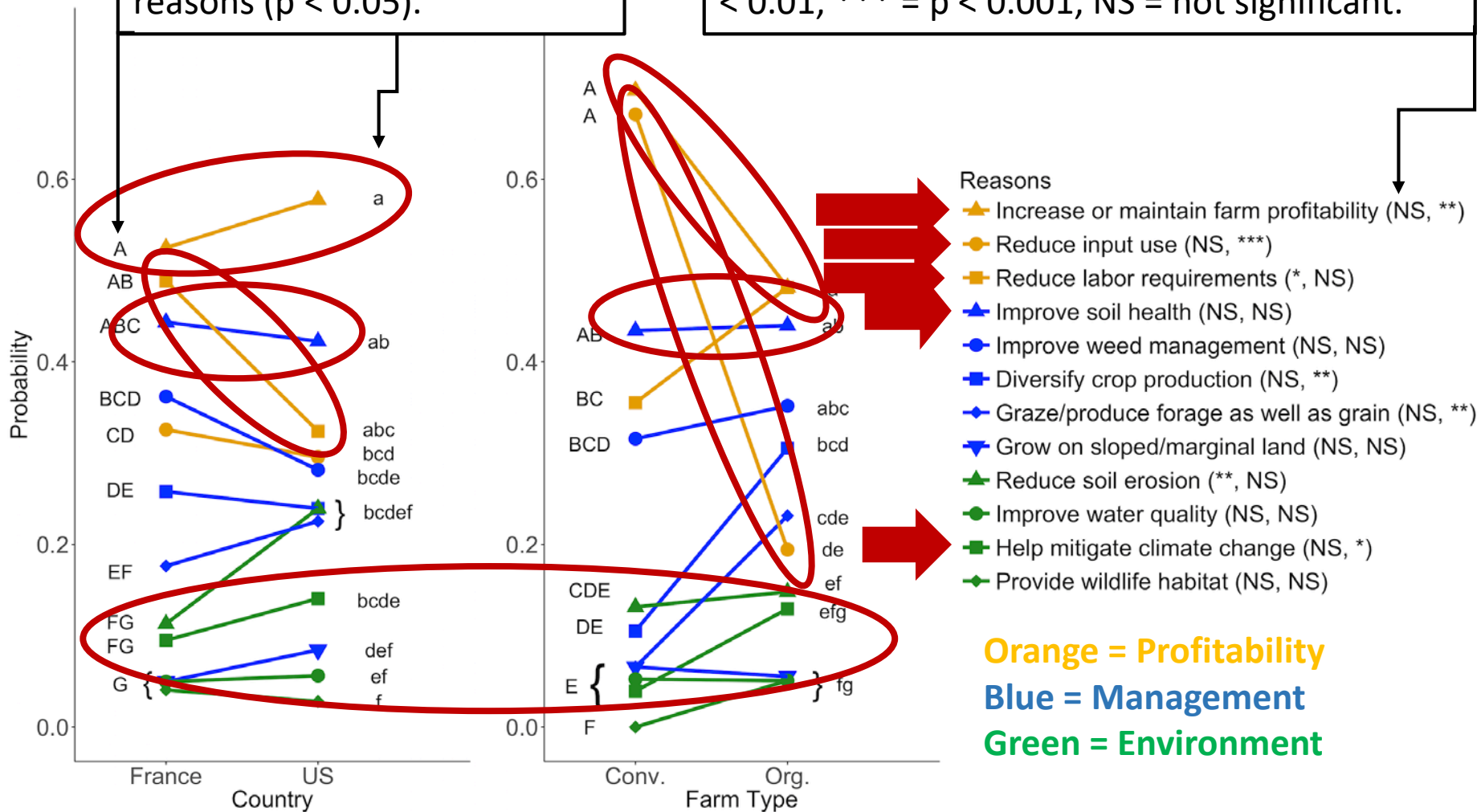
- To maintain or increase farm profitability
- To reduce input use
- To reduce labor requirements
- To reduce soil erosion
- To improve soil health
- To improve water quality
- To help mitigate climate change
- To diversify crop production
- To provide wildlife habitat
- To grow on sloped or marginal land
- To improve weed management
- To graze or produce forage in addition to grain
- Other, please define:

Potential

Different letters in vertical columns represent significant differences among ranking of reasons ($p < 0.05$).

to

Significant differences between the two countries and two farm types (respectively) are presented in parentheses. * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$, NS = not significant.



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.

Potential concerns



Cornell University



English ↕

Given the potential challenges associated with perennial grain production, what would be your top 3 concerns?

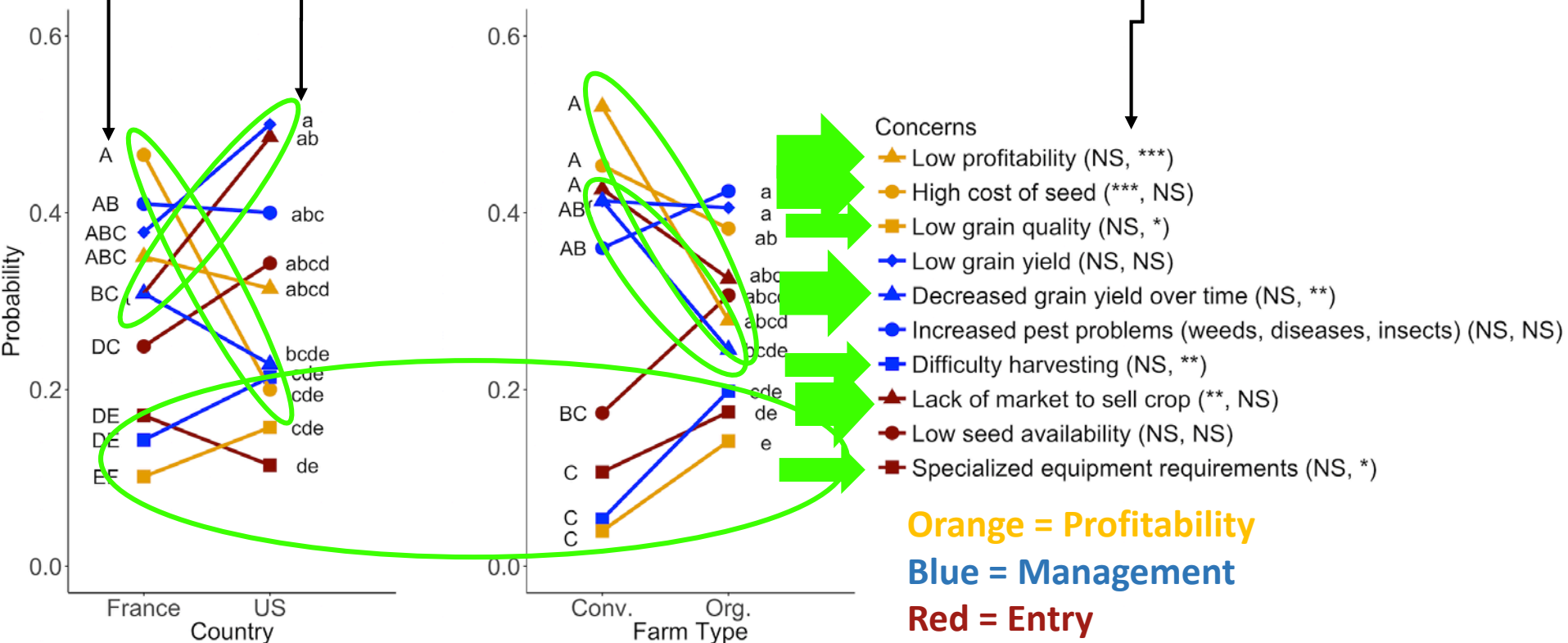
Type in a number from 1 to 3 in the box to the left (use "1" to indicate the most important reason)

- 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:

Potential Concerns about

Different letters in vertical columns represent significant differences among ranking of concerns ($p < 0.05$).

Significant differences between the two countries and two farm types (respectively) are presented in parentheses. * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$, NS = not significant.



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.



Cornell University



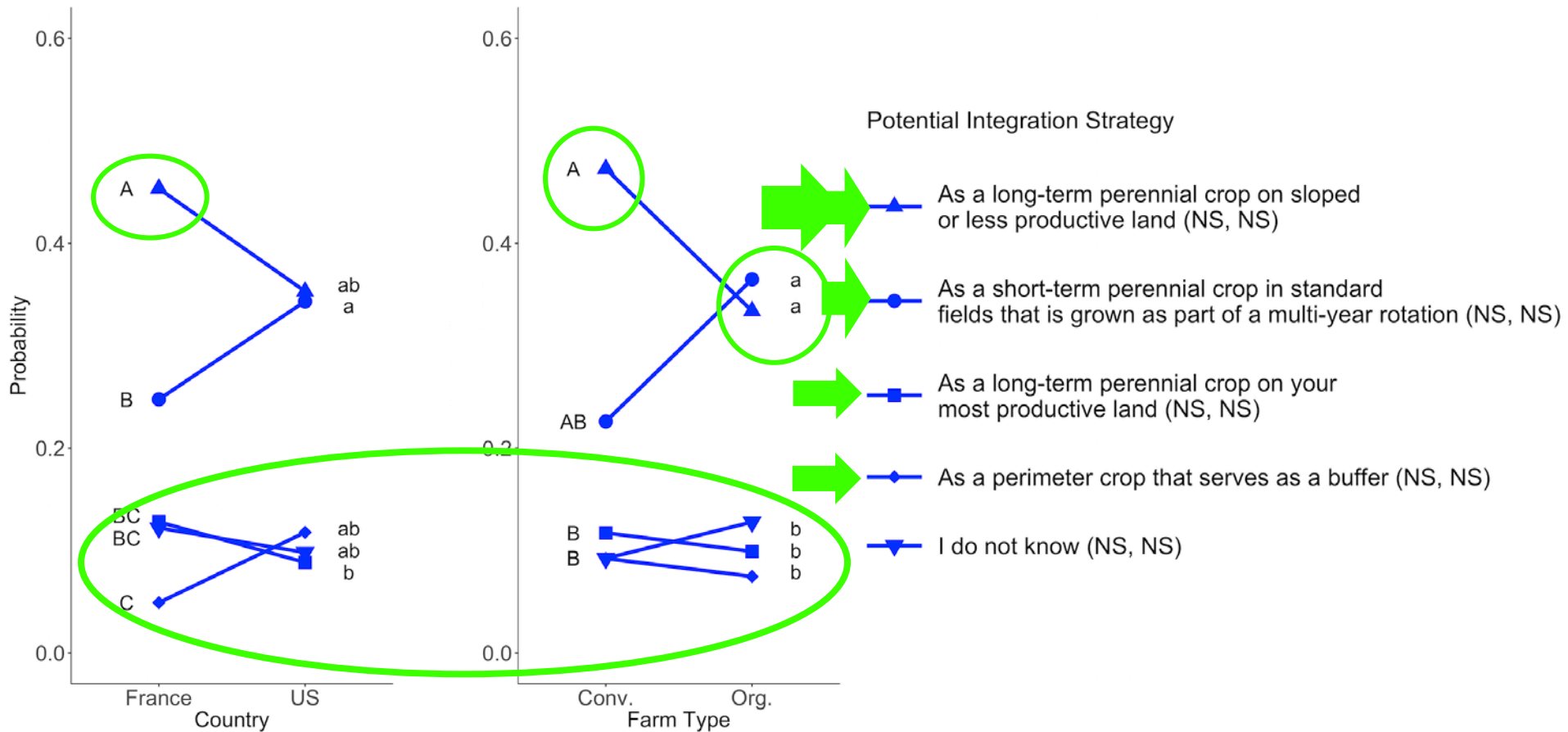
English ▾

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

Potential Integration Strategy



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



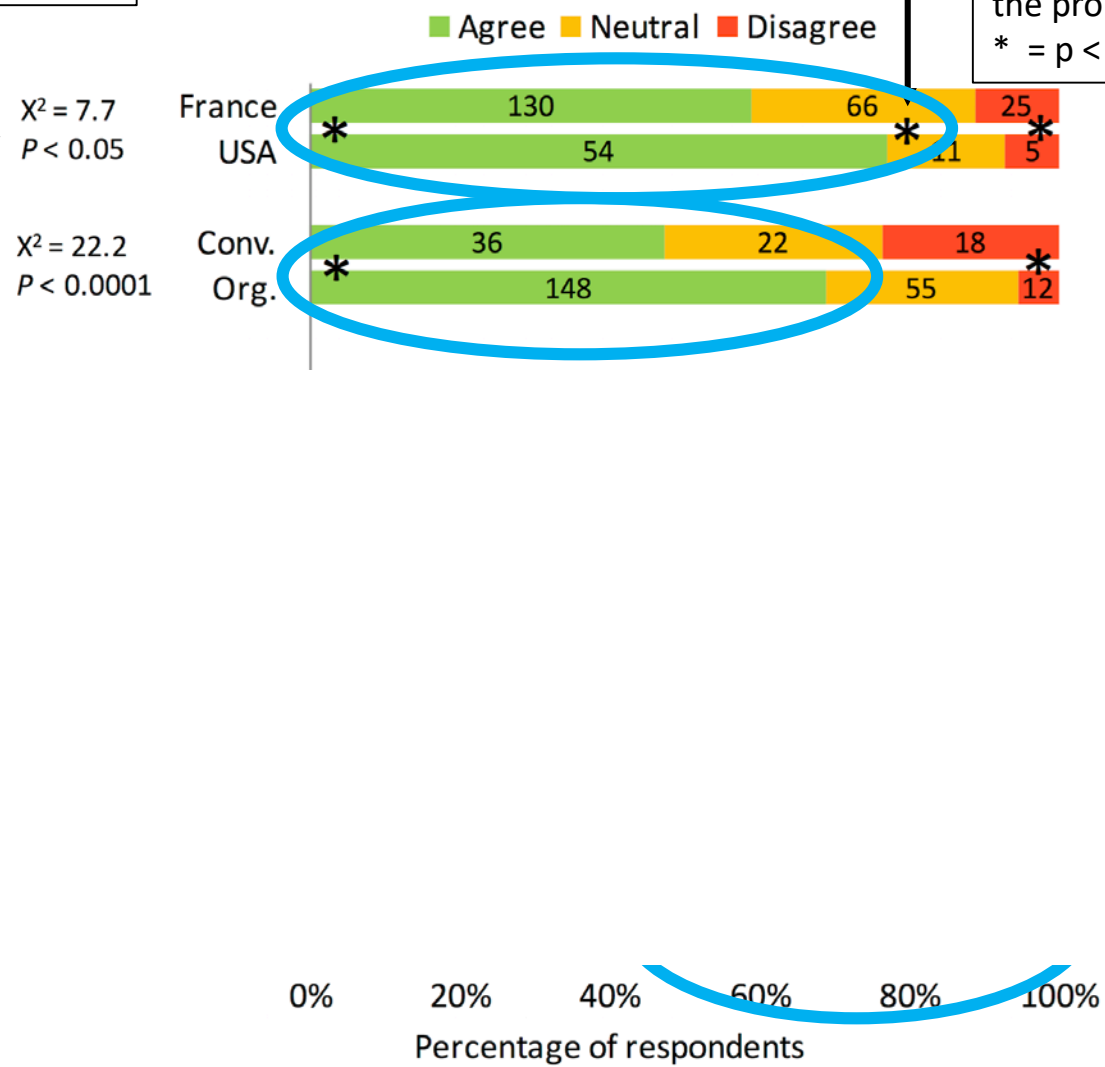
Please indicate whether you agree or disagree with the following statements.

	Agree	Neutral	Disagree
I am interested in dual-purpose perennial crops that can be harvested for both grain and forage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would grow perennial grains to provide environmental benefits even if they were not as profitable as other crops.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research funding should be spent on annual grain crops rather than developing new perennial grain crops.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Results of chi-square tests for country and farm type

Responses on perennial grains

* Stars between bar segments of the same color represent a significant difference in the proportions.
* = $p < 0.05$, ** = $p > 0.01$



I am interested in dual-purpose perennial crops that can be harvested for both grain and forage

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.

- 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

